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ABSTRACT

In a study prepared at the Indiana University School of Business, it was revealed that: (1) the Consumer Price Index has risen 39.7 percent from fiscal 1971 to fiscal 1976; since 1970-71, prices have risen slightly more in small cities than in larger ones; and according to the Bureau of Labor Statistics, the cost of living for their lower budget level has risen less than for their two higher budget levels; (2) Between fiscal 1973 and fiscal 1976, the CPI rose more than the compensation for most continuing employees of postsecondary institutions; although most of the clerical and service employees had a slight rise in real income, academic and administrative employees had a decline, and the decline was greatest for academic employees; (3) since fiscal 1973, compensation in Indiana institutions by professorial rank has failed to maintain pace with other schools in their comparison groups; and (4) among six occupational categories (secretary, janitor, carpenter, accountant, programmer, and buyer), Indiana institutions provided the least salary increase since fiscal 1970 in comparison with state government, Federal government, and private industry for three categories and the second least increase for the other three (although the fiscal 1976 percentage increases are somewhat better). (Author/MSE)

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1976

ECONOMIC INDICATORS FOR POSTSECONDARY EDUCATION IN INDIANA

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U S DEPARTMENT OF HEALTH,
EDUCATION & WELFARE
NATIONAL INSTITUTE OF
EDUCATION

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COMMISSION FOR HIGHER EDUCATION
STATE OF INDIANA

ECONOMIC INDICATORS
FOR POSTSECONDARY EDUCATION
IN INDIANA 1976

Richard L. Pfister
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Prepared for
THE COMMISSION FOR HIGHER EDUCATION
STATE OF INDIANA

Division of Research, School of Business
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1976

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Alfred E. Field played a major role in preparing the report. He participated closely in every phase of the study, but especially in assemblying the data and performing the necessary calculations. Professors Robert C. Turner and Eugene A. Brady were primarily responsible for the analysis of price trends and the outlook for prices.

Richard L. Pfister
Study Director

SUMMARY

1. The Consumer Price Index (CPI) has risen 39.7 percent from fiscal 1971 to fiscal 1976; the increase was 9.0 percent during fiscal 1974, 11.0 percent for fiscal 1975, and 7.1 percent for fiscal 1975. Since 1970-71, prices have risen slightly more in small cities than in large ones. According to the Bureau of Labor Statistics, the cost of living for their lower budget level has risen somewhat less than for the two higher budget levels since 1970-71.

2. Between fiscal 1973 and fiscal 1976, the CPI rose by more than the compensation for most of the continuing employees of the postsecondary education institutions. Both academic and administrative--professional employees, experienced a decline in real incomes with the decline greater for the academic employees. Clerical and service employees realized a small annual increase in real income.

3. Since fiscal 1972-73, compensation in the Indiana institutions by professorial rank has, with few exceptions, failed to maintain pace with other schools in their comparison groups. The average salaries by rank for Indiana institutions have, in recent years, been below the averages for the comparison groups of institutions.

4. Among six occupational categories (secretary, janitor, carpenter, accountant, programmer, and buyer) the Indiana educational institutions provided the least salary increase since 1970-71 in the comparison with state government, private industry, and the federal government for three categories (janitor, carpenter, and accountant), the second least increase for two (secretary and buyer), but the largest increase for one (programmer). The 1975-76 percentage increases for the educational institutions were next to lowest for three categories (secretary, janitor, and buyer), next to highest for one (accountant), and highest for two (carpenter and programmer).

A much larger sample of occupational categories for state government and the postsecondary institutions showed that state employees received substantially greater salary increases from November, 1972 to November, 1975 for the categories in the labor and trades, clerical, and professional groups.

5. The price index for nonpersonnel operating expenditures for Indiana institutions of postsecondary education rose by 7.5 percent during calendar 1975 which is half the 15.0 percent for 1974. The index for "unavoidables" rose by 4.8 percent in 1975 while that for the remainder of supply and equipment expenditures rose by 9 percent. The rise in the index, thus, slowed considerably in 1975.

6. The underlying or long-term inflation rate in the United States currently appears to be around 6 or 7 percent. The actual rate at a given time can be above, below, or right at this underlying rate, depending upon short-run events or developments. These short-run events have led to an inflation rate of 5.4 percent from July, 1975, to July, 1976, which is below the underlying rate. This rate for fiscal 1976 was held down primarily by weakness in farm prices and in food prices. Numerous considerations suggest that this relatively low rate will not continue much longer. The forecasted probable range for the average rate of inflation over the three fiscal years beginning July 1, 1976, is from 6 to 9 percent.

CHAPTER I

CONSUMER PRICES AND REAL INCOMES

Price changes that affect the cost of living are important because they influence the real value of money income. The real value of money income (called real income) is a measure of what a given money income will buy in goods and services. To determine what happens to real incomes of workers, one must take account of price changes as well as changes in money income. If money income rises by 5 percent in a given year but the cost of living also rises 5 percent, real income does not change. The process of adjusting money incomes for changes in the cost of living is called deflating incomes. The deflating of incomes, thus, converts money income into real income.

Real incomes of employees of postsecondary educational institutions will reveal the trend of money incomes relative to the trend of consumer prices. The behavior of real incomes of these employees in comparison with real incomes of other employee groups is especially important. Educational institutions compete with other sectors of the economy for employees. The wages paid by employers hiring the same occupational or skill groups cannot diverge much over time without those paying lower wages losing employees or hiring less qualified employees.

In discussing the economic well-being of employees, one should distinguish between money income (wages or salaries) and total compensation. To obtain compensation, one must add to money income the estimated value of the so-called fringe benefits (retirement programs, health, medical, and life insurance; unemployment insurance; etc.) which are paid for by the employer. Fringe or supplemental benefits are becoming a more important part of total compensation for most employees throughout the country. Thus, one should look at the total compensation of employees to evaluate their economic well-being. To look only at money wages and salaries is misleading if fringe benefits are increasing more rapidly than money income. This study will examine both money income and total compensation. The only reason for not using compensation exclusively is that such data are less readily available than salaries.

Difficult problems arise in estimating the value of fringe benefits to employees. Most studies simply do not attempt to estimate the value of benefits but try to estimate the costs of the fringes to employers. An example will illustrate the difference in the two approaches. Assume that two employees of a company both receive the same salary and the same contribution from the employer to a group life insurance plan. Assume further that one employee is sixty years old, and the other is forty-five years old. The current cost of life insurance benefit for the two employees is the same for the employer. But the older employee will usually value the life insurance more highly than will the younger employee.

Another useful distinction is that between salaries (usually gross) and take-home pay (spendable earnings). Take-home pay consists of what is left from gross earnings after deductions for personal income taxes, social security taxes, and the employees' share of such fringe benefits as group life insurance, medical and disability insurance, and retirement insurance. Some employees may feel that take-home pay rather than gross pay reflects their well-being. Young employees in good health will not attribute great present value to such fringes as retirement programs, health insurance, and life insurance. Gross salaries and compensation may be going up at the same time that the take-home pay is going down because of a rise in withholdings for taxes and fringes. Even the spendable earnings series constructed by the Bureau of Labor Statistics does not accurately portray take-home pay because it deducts personal income tax and social security tax withholdings but not the worker's share of fringe benefits.

An employee in any particular occupation hopes to keep pace not only with increases in the cost of living but also with the general rise in real incomes as the result of increases in productivity over time throughout the economy. Over the period 1955 to 1970, the Bureau of Labor Statistics (BLS) reported that the aggregate increase in output per man-hour in the economy averaged 3 percent per year. The BLS has predicted that the increase in productivity will decline to a rate of 2.7 percent per year for the period 1980-35 (BLS, "The U.S. Economy in 1985", Monthly Labor Review, March, 1976). Real incomes of employed persons will rise slightly less than the productivity increase because the number of hours worked per year is expected to continue to decline. The distribution of the increase in real incomes will not necessarily be even--some groups will realize more than the average increase and other groups less than the average.

In addition to this rise in productivity, an individual worker, regardless of occupation, can expect his earnings to rise over his working years as he gains more experience and training and advances in his profession or occupation. For some groups, this life-cycle real earnings curve will reach a peak before retirement and then decline. For others, the curve continues to rise, though at a decreasing rate, until retirement. The life-cycle real earnings curve will, during the years when it is going up most rapidly, rise even more rapidly than the average productivity increase for the entire economy. Unfortunately, the existing data do not permit estimation of precise life-cycle real earnings curves for different occupations, so one cannot compare existing real earnings with those expected from the life-cycle curves. Nevertheless, one should keep this life-cycle earnings curve in mind when analyzing the earnings of particular individuals or groups over time.

Consumer Price Indexes

With this brief introduction to some of the issues involved in evaluating income changes, we now turn to a consideration of the Consumer Price Index (CPI). This index is widely used as an indicator of cost-of-living changes for all consumers.* Collective bargaining agreements with escalator clauses specify a relationship between the wage level and the CPI. Money wages and salaries are commonly deflated by using the CPI; the result is widely accepted as a measure of real income or actual purchasing power of money income.

The Bureau of Labor Statistics conducts the monthly survey of consumer prices for the construction of the CPI. The BLS publishes the price index each month for the United States as a whole and individually for the largest cities. Interviewers obtain prices for a selected group of goods and services (400 items constitute the "market basket" for urban wage and clerical workers) from 18,000 establishments in 39 metropolitan areas and 17 smaller cities. Indexes are published separately for only 23 metropolitan areas.

Each quarter (March, June, September, and December), the BLS publishes a consumer price index for five different size groups of cities. The indexes are intended to represent average price changes for cities within each size group. This index is useful for comparing rates of change of prices among different size groups of cities. No separate consumer price indexes are available for the different regions of the nation. The indexes for different size groups of cities are not, however, valid indicators of differences in price levels or costs of living. The BLS warns that the indexes were designed only to measure changes in price levels over time for each city size group and not differences in price levels among them.

---

*This index is acknowledged to contain an upward bias because of its inability to handle adequately quality changes in products and because of shifting consumption patterns as relative prices change. The upward bias has been estimated to be 1 1/2% to 2% per year.

For several years, the Bureau has conducted studies of the costs of three standards of living for a hypothetical urban family of four. The objective of these studies is to determine the dollar cost of maintaining these three levels of living and to calculate specifically the relative differences in living costs for these levels among various cities. This index is the only one that attempts to provide valid comparisons of differences in living costs among cities. The other indexes of BLS discussed previously are intended only to measure changes in prices over time. The BLS distinguishes three levels of living and specifies the quantities and qualities of the goods and services necessary to achieve the three levels. The three budgets reflect different levels of the "maintenance of health and social well-being, the nurture of children, and participation in community activities." The level of living represented by the lower budget differs from the moderate and higher budgets in that the family is assumed to live in rental housing without air conditioning, to perform more services for itself, and to utilize free recreation facilities in the community. For most items common to the three budgets, the quantity and quality decline as the budget level goes down. The BLS prices the three budget levels in a sample of thirty-nine metropolitan areas and of some nonmetropolitan areas in the four major regions of the U.S. (Northeast, South, North Central, and West). For the United States as a whole, average indexes for the three budget levels are given for urban areas, for metropolitan areas, and for nonmetropolitan areas.

Another source of price data was the quarterly survey sponsored by the American Chamber of Commerce Researchers Association (ACCRA). About 130 local

Chambers of Commerce have participated in this quarterly survey since it began in 1971. The local chambers sample the prices of a specified list of goods and services in each city. The aggregate cost of this list of items for each city is then expressed as a percentage of the average for all cities. The resulting indexes, thus, do not trace changes in prices over time, but compare prices among the participating cities in each quarter. A substantial number of small cities participate in the survey. Five Indiana cities (Evansville, Bloomington, Columbus, Indianapolis, and South Bend) have joined in the survey. These indexes are not as carefully and rigorously prepared as the BLS indexes and are undoubtedly not as reliable. Nevertheless, they provide some information by individual cities that is useful to examine along with the BLS data.

Price Trends in Recent Years

What do these price indexes show for recent years? First, look at the U.S. average for the CPI in Table I-1 which contains the monthly average for each fiscal year from 1970-71 to 1975-76. The BLS publishes the monthly indexes with 1967 as the base year which means that the 1967 monthly average equals 100. Column 1 in the table contains the fiscal year indexes with 1967 as the base year. Column 2 shows the index converted to fiscal 1970-71 as the base year.

Column 2 shows that the index has risen by 39.7 percent from 1970-71 to 1975-76. The greatest increases occurred in the two fiscal years 1973-74 and 1974-75 as shown in Column 3 which presents the year-to-year percentage changes. The greatest jump (11.0 percent) occurred in fiscal 1975 while fiscal 1974 was not far behind (9.0 percent). The increase in fiscal 1976 was 7.1 percent, still far above the rate of the earlier years. The fiscal year figures are, as stated above, monthly averages. Because the index has been rising each year for the period covered, the last month of each year is considerably higher than

TABLE I-1

CONSUMER PRICE INDEX
MONTHLY AVERAGES FOR SELECTED FISCAL YEARS

Year	Index 1967 = 100 (1)	 1970-71 = 100 (2)	 Percent Increase from previous year (3)
1970-71	119.0	100.0	---
1971-72	123.3	103.6	3.6
1972-73	128.2	107.7	4.0
1973-74	139.8	117.5	9.0
1974-75	155.2	130.4	11.0
1975-76	166.2	139.7	7.1

Source: Bureau of Labor Statistics, Consumer Price Index.

the first month. To illustrate the effect of this annual rise during each year, the index rose by 45.8 percent from July 1970 to June 1976. This increase is greater than the 39.7 percent for the fiscal year averages. This fiscal average for 1970-71 was, of course, higher than the figure for July 1970 while the fiscal average for 1974-75 was somewhat lower than the figure for June 1975. The rate of increase for the first six months of calendar 1976 has slowed down somewhat from the previous thrity months or so. For the first seven months of 1976, the index rose 2.3 percent which would constitute an annual rate of 4.6 percent if the rate of increase remains the same for the remaining six months of the calendar year. Most analysts believe that special circumstances caused the rate to be unusually low in early 1976 and that the rate for the entire year will be in the range of six to seven percent.

Table I-2 contains the quarterly averages for the fiscal years 1970-71 to 1975-76 for five size classes of cities. Column 1 shows the indexes with 1967 equal to 100.0. It shows that the level of the indexes declined with the city-size group until 1974-75 and 1975-76 when the Classes C and D showed a tendency to rise above Class B. As previously explained, however, these indexes are not valid indicators of differences in price levels or living costs among cities. They are valid indicators only for rates of change of price levels among the city-size groups. To facilitate a comparison of rates of change, Column 2 shows the indexes converted to 1970-71 as the base year. The greatest increase over the five-year period was 41.9 percent for Class D or smallest cities. The second largest increase was 40.5 percent for Class C or second smallest cities. The other three classes had about the same increase, varying only from 38.6 percent to 39.3 percent.

Column 3 shows the year-to-year percentage increases. During the first two years, the largest city class had the greatest percentage increases. In the

TABLE I-2

CONSUMER PRICE INDEX BY CITY SIZE GROUP QUARTERLY AVERAGES FOR SELECTED FISCAL YEARS

City Size Class and Year	Index		Percent Increase Over Previous Year (3)
	(1967 = 100) (1)	(1970-71 = 100) (2)	
A-1 (over 3.5 million)			
1970-71	121.0	100.0	---
1971-72	125.6	103.8	3.8
1972-73	131.4	108.6	4.6
1973-74	143.6	118.6	9.3
1974-75	158.0	130.6	10.0
1975-76	168.2	139.0	6.4
A-2 (1.4 - 3.5 million)			
1970-71	119.8	100.0	---
1971-72	123.9	103.4	3.4
1972-73	129.0	107.7	4.1
1973-74	140.4	117.2	8.8
1974-75	155.6	129.9	10.9
1975-76	166.1	138.6	6.7
B (.25 - 1.4 million)			
1970-71	119.0	100.0	---
1971-72	123.0	103.4	3.4
1972-73	128.3	107.8	4.3
1973-74	140.0	117.6	9.1
1974-75	155.4	130.6	10.9
1975-76	165.8	139.3	6.7
C (50 - 250 thousand)			
1970-71	118.4	100.0	---
1971-72	122.2	103.2	3.2
1972-73	127.5	107.7	4.3
1973-74	139.7	118.0	9.6
1974-75	155.7	131.5	11.3
1975-76	166.3	140.5	6.8
D (2.5 - 50 thousand)			
1970-71	117.9	100.0	---
1971-72	121.5	103.1	3.6
1972-73	126.3	107.1	4.0
1973-74	139.2	118.0	10.2
1974-75	155.2	131.6	12.0
1975-76	167.3	141.9	7.8

Source: Bureau of Labor Statistics, Consumer Price Index (March, June, Sept. and Dec. issues) last three years, however, the smallest cities had the largest increases. While percentage increases from one year to the next will vary among city size groups, the increases over a fairly long period are not apt to be greatly different among the various size groups.

Tables I-3 and I-4 contain data from the BLS studies of three standards of living for an urban family of four. Table I-3 gives the dollar costs and indexes for the five years 1970 to 1975 inclusive. In the autumn of 1975, the U.S. urban average for the higher budget level was $22,294; for the intermediate budget, $15,318; and for the lower budget, $9,588.

The increase in the lower budget index for the urban, metropolitan, and nonmetropolitan areas was not greatly different over the three-year period, varying from 37.7 percent to 38.2 percent. The bulk of this increase occurred during 1973 (an increase of 11 percent) and 1974 (an increase of 12 to 13 percent). During 1971, 1972, and 1975, the index rose by 2 to 4 percent only. For the lower budget, the costs for metropolitan areas were generally about 1.5 percent above the U.S. urban average, while nonmetropolitan areas were about 7 percent below this average until 1974 and 1975 when they were just 6 percent below.

The moderate budget experienced an increase of 43.0 to 44.6 percent during the period--a little more than 5 percentage points above the increase for the lower budget. Again the bulk of the increase occurred during 1973 and 1974, although the increase in 1975 was about 7 percent. For the moderate budget, the metropolitan areas were from 1.4 to 2.4 percent above the urban average, but the nonmetropolitan areas were around 10 percent below this average.

The indexes for the higher budget level increased about the same as for the moderate budget from 1970 to 1975. The metropolitan areas were about 3 percent above the urban U.S. average. The gap between this average and the

TABLE I-3

COSTS FOR THREE STANDARDS OF LIVING
U.S. AVERAGES, 1970-1975

Budget Level and data	Urban Index[a]		Metropolitan Index[a]		Nonmetropolitan Index[a]	
	(I)	(II)	(III)	(IV)	(V)	(VI)
Lower Budget						
Spring 1970	$6,960	100.0	$7,061	100.0	$6,512	10010
Autumn 1971	7,214	103.6	7,330	103.8	6,694	102.8
Autumn 1972	7,386	106.1	7,509	106.3	6,837	105.0
Autumn 1973	8,181	117.5	8,305	117.6	7,626	117.1
Autumn 1974	9,198	132.2	9,323	132.0	8,639	132.7
Autumn 1975	9,588	137.8	9,720	137.7	9,002	138.2
Moderate Budget						
Spring 1970	$10,664	100.0	$10,933	100.0	$ 9,600	100.0
Autumn 1971	10,971	102.9	11,232	102.7	9,805	102.1
Autumn 1972	11,446	107.3	11,731	107.3	10,182	106.1
Autumn 1973	12,626	118.4	12,909	118.1	11,363	118.4
Autumn 1974	14,333	134.4	14,644	133.9	12,945	134.8
Autumn 1975	15,318	143.6	15,638	143.0	13,886	144.6
Higher Budget						
Spring 1970	$15,511	100.0	$15,971	100.0	$13,459	100.0
Autumn 1971	15,905	102.5	16,408	102.7	13,657	101.5
Autumn 1972	16,558	106.8	17,112	107.1	14,084	104.6
Autumn 1973	18,201	117.3	18,760	117.5	15,708	116.7
Autumn 1974	20,777	134.0	21,381	133.9	18,081	134.3
Autumn 1975	22,294	143.7	22,940	143.6	19,412	144.2

[a] Spring 1970 = 100

Source: Bureau of Labor Statistics, "Autumn 1975 Urban Family Budgets and Comparative Indexes for Selected Urban Areas" (title varies slightly for earlier years). The last four reports have been news releases; earlier ones were supplements to BLS Bulletin 1570-5.

TABLE I-4
LEVEL OF LIVING COST INDEXES FOR THREE BUDGET LEVELS, SELECTED AREAS, 1970-74

Area and budget level	Indexes (Urban U.S. = 100 for each year)					
	Spring 1970	Autumn 1971	Autumn 1972	Autumn 1973	Autumn 1974	Autumn 1975
Lower Budget						
Urban - U.S.	100	100	100	100	100	100
Nonmetro - U.S.	94	93	93	93	94	94
Nonmetro - N. Central	97	96	96	97	97	96
Champaign - Urbana	104	104	104	105	103	105
Chicago - N.W. Ind.	104	104	104	106	104	103
Indianapolis	102	100	99	100	98	98
Minneapolis	103	100	102	101	102	100
Los Angeles	108	106	106	104	104	104
San Francisco	110	111	111	109	108	110
Intermediate Budget						
Urban - U.S.	100	100	100	100	100	100
Nonmetro - U.S.	90	89	89	90	90	91
Nonmetro - N. Central	92	92	92	93	92	92
Champaign - Urbana	102	102	101	103	102	103
Chicago - N.W. Ind.	104	105	105	105	103	103
Indianapolis	102	101	100	101	99	99
Minneapolis	102	102	103	103	104	103
Los Angeles	101	100	101	99	98	99
San Francisco	107	106	108	106	106	107
Higher Budget						
Urban - U.S.	100	100	100	100	100	100
Nonmetro - U.S.	87	86	85	86	87	87
Nonmetro - N. Central	90	89	89	90	90	89
Champaign - Urbana	102	102	102	103	101	102
Chicago - N.W. Ind.	103	104	104	104	102	101
Indianapolis	101	99	98	99	96	96
Minneapolis	102	102	103	104	104	103
Los Angeles	103	102	103	102	100	101
San Francisco	107	106	108	106	106	108

Source: Bureau of Labor Statistics, "Autumn 1975 Urban Family Budgets and Comparative Indexes for Selected Urban Areas" (title varies slightly for earlier years). The last three reports have been news releases; earlier ones were supplements to BLS Bulletin 1570-5.

nonmetropolitan areas was wider for the higher budget than for the other budgets--it was between 13 and 15 percent lower for the nonmetropolitan areas.

The important result from Table I-3 is that the cost of living rose by approximately the same percentage for all three budget levels in the three areas (urban, metropolitan, and nonmetropolitan). In the 1975 report, it was possible to say that the data in Table I-3 showed the cost of living was increasing by approximately the same percentage for all three budget levels in the three areas (urban, metropolitan, and nonmetropolitan). In some years, the percentage increases were greater for the lower budget, and in others they were greater for the higher budget. In 1975, however, a marked change occurred as the rise in costs was substantially greater for the moderate and higher budgets than for the lower budget. The percentage increases for 1975 over 1974 (urban average) were 4.2 for the lower budget, 6.9 for the intermediate budget, and 7.2 percent for the higher budget. This differential between the lower budget and the other two was considerably greater than it had been in any of the earlier years covered in Table I-3. The higher and intermediate budgets showed considerably greater cost increases in 1975 than the lower budget for food, shelter, and taxes. The result was that the increase in budget costs over the 1970-75 period was about six percentage points greater for the two higher budgets than for the lower one.

The other generalization from the 1975 study still hold. metropolitan areas generally cost about 2 to 3 percent more for all three budget levels than the U.S. urban average. But the gap between nonmetropolitan and urban averages widens for the higher budget level. The higher the budget, the greater the cost saving of living in nonmetropolitan areas.

Table I-4 presents indexes to compare the costs of the three budget levels among various cities and city groupings. For each year the urban U.S. average equals 100. The discussion of Table I-3 indicated that the nonmetropolitan U.S.

average was below the urban average by amounts that increased with the budget level. The nonmetropolitan average for the North Central area (Table I-4) is two to four percentage points above the nonmetropolitan average for the U.S. The southern nonmetropolitan areas undoubtedly bring the U.S. average down a good deal. Thus, the gap between the nonmetropolitan average for the North Central and the U.S. urban average is somewhat less than that for the U.S. metropolitan and urban averages but shows the same tendency to widen with the higher budget levels. The range for the North Central is from 3 percent below to 11 percent below the U.S. urban average which contrasts with a gap of 6 to 15 percent for the national nonmetropolitan average. Nevertheless, the difference is substantial for the moderate and higher budget levels in the North Central area.

A comparison between the metropolitan average for the U.S. (not shown in Table I-4) and the nonmetropolitan average for the North Central region reveals a large differential for the higher budget. The metropolitan average is from 14 to 16 percent higher; for the moderate budget, the difference is 10 to 11 percent; and for the lower budget, the difference is 4 to 6 percent.

Table I-4 contains the relative indexes for six metropolitan areas to show how a few cities with universities in the Big Ten group compare. Indianapolis tends to be close to the U.S. average for the lower and intermediate budgets but below for the higher budget. Champaign, Illinois and Chicago, Illinois are a little above the national average for all three budgets. Los Angeles is nearly the same as the U.S. average for the moderate and higher budgets, but is somewhat above for the lower budget. Minneapolis has generally been a little above average for all three budgets. San Francisco has the highest costs of the six cities, being from 6 percent to 11 percent above the U.S. average.

CHAPTER II

COMPENSATION FOR CONTINUING EMPLOYEES

This chapter and the next two evaluate the compensation of employees of state-supported institutions of postsecondary education in Indiana. To facilitate comparisons among different types of jobs within the institutions and with comparable jobs in the public and private sectors, institutional employees have been divided into three categories: academic, administrative and professional (including technicians and management employees), and clerical and service. This chapter deals with changes in the level of compensation for continuing employees in these three groups over recent years and the estimated effect of inflation on real income; Chapters III and IV compare salaries for academic and non-academic personnel, respectively, at these institutions with the salaries paid by other employers competing in the same labor markets.

Employee compensation can be measured in several ways, and the particular concept of compensation is in part dependent upon the purpose for which it is to be used. Although the primary emphasis of this study is on the cost of producing postsecondary educational services in the state of Indiana, a nearly equal concern is with the relative income position (welfare) of the employees of these educational institutions. For these reasons, an appropriate measure of compensation should have the following characteristics:

(1) It should reflect the total cost to the institution of obtaining an employee's services. This necessitates including some costs, such as the employer's contribution to OASDI and other "fringe benefits" that do not constitute a part of the employee's actual salary;

(2) It should show the compensation of employees who continue with the institutions and follow the usual progression within an occupational category.

(3) To accomplish the preceding objective, the compensation measure should include only continuing employees who do not have changes in job assignments from one occupational group to another and who do not have changes in the term of appointment or the FTE equivalent.

In order to obtain such a measure of compensation, each institution provided salary data for employees who were on its payroll in both December 1972 and December 1975. The salaries were all expressed at an annual rate and were assumed to be the salaries for the fiscal years 1972-73 and 1975-76. For each of the three categories of employees, the institutions estimated their costs for fringe benefits and expressed it as a percent of salaries. The estimated cost of fringe benefits was added to salaries to yield total compensation of the continuing employees for the fiscal years 1972-73 and 1975-76. In the two previous studies, similar data were collected; each study advances by one year the beginning and ending period.

These data reveal the growth of compensation as employees followed the usual progression within occupations over the three years. To avoid distorting the results, certain employees were excluded even though they were employed in both the beginning and ending years. If the term of appointment of an employee changed from nine or ten months to twelve months, or vice versa, the employee was excluded. A change in the full time equivalent for an employee (say from .5 FTE to 1.0 FTE) was also grounds for exclusion from the compilation. The reason for these exclusions was that the rate of pay frequently changed just because of a change in FTE or that a change in term of appointment reflected a change in responsibilities rather than a normal progression within the occupational group. Any employee who shifted from one of the broad categories to another was also excluded because such a shift undoubtedly represented a significant change in duties or responsibilities. These exclusions permit the data to portray the desired measures more accurately.

Table II-1 contains the percentage changes in compensation for the three employee categories over the period 1972-73 to 1975-76. The first column gives the total percentage change in compensation for continuing employees by category and by institutional size over the three-year period. The three-year increases ranged from 23.07 percent for academic employees in the large institutions to 31.54 for clerical and service employees in the smaller institutions. All institutions tended to give the greatest increases to the clerical and service group and smallest increases to the academic group.[1] The compound annual rate, shown in column two, is the rate of increase that would exist if equal percentage increases were given each year. Institutions with campuses in more than one area submitted data for each location, and institutional size refers to enrollment at each location. The Purdue West Lafayette campus, for example, is included in the 7,500-enrollment-and-over category. Although the smaller institutions had larger salary increases in all three categories, the differences were not great.

The third column of Table II-1 shows the annual rate of increase in compensation deflated by the Consumer Price Index (CPI) for the United States. The annual rate of increase in this index was nearly 9 percent for the fiscal years 1972-73 to 1975-76, a rate that exceeded the annual rate of increase in compensation in all categories for the aggregated data in Table II-1 except for clerical and service employees at the smaller institutions.

The last column in Table II-1 gives the annual rate of change in real compensation when the money value of compensation is deflated with the CPI for the appropriate city size group for each campus. In all cases, the percentages in this last column are lower than those in the third column. This result means

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[1] The procedure adopted for these calculations may understate the increase for the academic group by eliminating faculty members who move into administrative work part-time or full-time. Such moves are fairly common for faculty and usually result in greater salary increases.

TABLE II-1

PERCENTAGE CHANGES IN COMPENSATION AT INDIANA INSTITUTIONS OF POSTSECONDARY EDUCATION FOR CONTINUING EMPLOYEES FISCAL 1973 TO 1976

Employee Categories and Institutions	Percentage Changes			
	Fiscal Years 1973-1976	Annual Rate of Change	Annual Rate Deflated-U.S. CPI	Annual Rate Deflated-City CPI
Academic Employees				
Institutions with over 7,500 enrollment	23.07	7.16	-1.57	-2.00
Institutions with less than 7,500 enrollment	24.84	7.68	-1.10	-1.33
Administrative and Professional				
Institutions with over 7,500 enrollment	25.76	7.94	-0.85	-1.34
Institutions with less than 7,500 enrollment	27.15	8.33	-0.49	-0.74
Clerical and Service				
Institutions with over 7,500 enrollment	27.40	8.41	-0.43	-0.88
Institutions with less than 7,500 enrollment	31.54	9.57	+0.64	+0.31

that the price indexes for the relatively small cities containing the various Indiana institutions increased slightly more than the national average for those years. The differences, however, are small. At only one institution did academic employees realize a positive annual percentage increase when nominal salaries were deflated by the CPI for the different city-size groups. Administrative and professional employees similarly had a positive change in real income over the three-year period at only one institution. Clerical and service employees experienced a gain in real income at only four campuses.

Note again that the data in Table II-1 refer to continuing employees. If the table had shown average compensation for all employees in each category in each year, the increases in real compensation (money values deflated by the price index) would have been somewhat lower. The reason is that employees who left the institutions before 1975-76 were typically replaced by persons of lower rank or grade and lower salary. The average increase in nominal compensation for all employees each year would, thus, have been less than for just the continuing ones.

Employees of the educational institutions, thus, have not realized any of the increase in real incomes that normally accompany the general increase in productivity in the economy, nor have they realized any of the increase in real income that might be expected as a part of moving along the life-cycle earnings curve that was discussed in the introductory chapter. Taking account of these considerations suggests that real compensation of the continuing employees of the postsecondary institutions in Indiana has fallen behind substantially from what might be considered "normal" levels, even in periods of rapid inflation.

Another consideration in evaluating the data in Table II-1 is that they refer to gross compensation, including all withholdings as well as the employers' shares of fringe benefit costs. Excluding the employer's contribution to OASDI would reduce the nominal increases in compensation and would magnify the differences between the rates of increase for the three occupational categories. Between one and two percent of the increase in "fringe" benefits for academic employees during the three-year period was accounted for by increases in the base for social security taxes. The base was raised from $10,800 to $13,200 in 1974, to $14,100 in 1975, and to $15,300 in 1976. Employees earning less than the base, of course, were unaffected. From the employee's standpoint, the decline in take-home pay or spendable earnings was even greater, since his portion of the increased tax was also deducted.

Salaries and wages for 1976-77 have been determined by the institutions for their employees. The amount appropriated by the legislature for salaries was intended to give average increases of 4.9 percent. Presumably the continuing employees will receive increases averaging a little more than 4.9 percent. The outlook for consumer prices during FY 1976-77 is that they are highly likely to increase by more than this average increase in salaries.

The nominal percentage increases from FY 1973 to FY 1976 were greater than those for FY 1972 to FY 1975 which in turn exceeded those for FY 1971 to FY 1974. The rate of inflation nearly matched the nominal increases from FY 1971 - FY 1974 so that real income grew only slightly. The rate of inflation was greater than the rate of increase in compensation between FY 1972 and FY 1975 so real incomes declined (See the 1975 edition of Economic Indicators). The declines in real incomes continued for the period FY 1973 to FY 1976 except for clerical and service employees who experienced a slight rise. The declines, however, were not as great as for FY 1972 to FY 1975.

CHAPTER III

COMPARISONS OF FACULTY COMPENSATION

The Indiana institutions of postsecondary education compete for faculty over broad geographic markets with other similar institutions. Precisely which schools each Indiana institution compares itself with is a matter of judgment. Indiana University and Purdue University have compared themselves for some time with a group of schools that includes the others in the Big Ten plus the Universities of Chicago and California. Ball State and Indiana State also compare with a group of schools that they consider to be somewhat similar to themselves. No regular comparison groups exist for Vincennes, IVTC, and the regional campuses. We will compare Vincennes University with junior and community colleges in nearby states for which some limited data exist. Similarly, limited data exist for regional campuses in other states which can be used to compare with the Indiana regional campuses. IVTC's competition for instructors comes primarily from other proprietary technical schools and from private industry and commerce. The sections that follow will compare faculty salaries among these various groups of similar institutions.

Indiana University, Purdue University, and the Big Ten Group

A primary source for faculty salaries and compensation is the summer issue of the AAUP Bulletin which reports annually on a salary survey of colleges and universities. In recent years, the AAUP Bulletin has provided average compensation (salary plus fringes) by rank, but not salary by rank. The AAUP questionnaire also asks for the average percentage salary increases by rank for returning faculty. Unfortunately, many schools do not report this figure, so it is not possible to construct a reliable series for the Big Ten schools over recent years. Salaries and compensation for faculty on eleven or twelve month duty are converted to a nine or ten month equivalent. Table III-1 shows the average compensation by rank for Indiana University, Purdue University, and the Big Ten group. It also shows the standing of the two universities among the group in mean compensation. Finally, the table shows the percent increase in mean compensation from one year to the next. The data are for the main campuses only except for the University of California which apparently reports for just the entire system.[1]

For professors, Indiana University was close to the group mean for all years except 1974-75 when it fell well below. This gap widened by another $100 in 1975-76. It was above the group mean only in 1971-72 and below it in the other years. The 1975-76 figures was $1,100 below the group mean, the largest the gap has been in the six years shown in Table III-1. I. U. was fifth among this group of schools in 1971-72 and was sixth in the other years prior to 1974-75 when it dropped to eighth. It was tied for seventh in 1975-76. Over the span of years shown in Table III-1, I. U.'s full professors experienced a 26.2 percent increase in mean compensation compared with an increase of 30.4 percent for the group. Only in 1971-72 did I. U.'s professors record a greater percentage increase than that for the group mean.

At the associate professor level, I. U. was again close to the group mean in all years except 1974-75 when it fell short by $700 and in 1975-76 when the short fall was $600. The I. U. figure was above the group mean in the first two years, but below it in the other four years. I. U. was fifth among the twelve schools in the first two years, sixth in the next two, dropped to ninth in 1974-75 and to tenth in 1975-76. Its average compensation rose 25.3 percent

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[1] For the years prior to 1975-76, the University of Minnesota reported for the entire system. In 1975-76 the figures were given separately for the Twin Cities campuses which are the ones used in constructing Table III-1. The average compensation for each rank in the Twin Cities campuses was either $100 or $200 higher than for the entire system. The ranks of I. U. and Purdue were the same whether the Minnesota data were for the entire system or for the Twin Cities campuses only.

TABLE III-1

FACULTY COMPENSATION DATA: I. U., PURDUE, AND BIG TEN GROUP[a], 1970-71 to 1975-76

(Rounded to Nearest $100)

Rank and Institution	Year					
	1970-71	1971-72	1972-73	1973-74	1974-75	1975-76
Professor						
I.U.[b] - Compensation	$22,900	$24,100	$24,800	$25,800	$26,800	$28,900
- Rank	6	5	6	6	8	7 (tie)
- % increase/yr.[c]	--	5.2	2.9	4.0	3.9	7.8
Purdue - Compensation	23,500	25,000	25,900	26,200	27,700	29,800
- Rank	4	3	4	5	5	5
- % increase/yr.	--	6.4	3.6	1.2	5.7	7.6
Group Mean - Compensation	23,000	24,000	25,100	26,200	27,800	30,000
- % increase/yr.	--	4.3	4.6	4.4	6.1	7.9
Associate Professor						
I.U. - Compensation	17,000	17,700	18,100	19,100	19,600	21,300
- Rank	5	5	6	6	9	10
- % increase/yr.	--	4.1	2.3	5.5	2.6	8.7
Purdue - Compensation	17,300	18,300	18,900	19,300	20,200	21,700
- Rank	4	3	4	5	6	7
- % increase/yr.	--	5.8	3.3	2.1	4.7	7.4
Group Mean - Compensation	16,800	17,400	18,200	19,200	20,300	21,900
- % increase/yr.	--	3.6	4.6	5.5	5.7	7.9
Assistant Professor						
I.U. - Compensation	14,400	14,800	15,300	16,100	16,500	17,700
- Rank	2	4	5	4	7	10
- % increase/yr.	--	2.8	3.4	5.2	2.5	7.3
Purdue - Compensation	13,900	14,600	15,000	15,200	16,000	17,300
- Rank	6	5	7	9	10 (tie)	11
- % increase/yr.	--	5.0	2.7	1.3	5.3	8.1
Group Mean - Compensation	13,800	14,400	15,000	15,800	16,600	18,100
- % increase/yr.	--	4.3	4.2	5.3	5.1	9.0

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[a] All Big Ten schools plus the University of Chicago and the University of California. The group mean is unweighted.

[b] Main campuses only.

[c] This percentage increase is the year-to-year increase in the mean salary for the rank.

Source: AAUP, Summer Bulletin

over the period compared with 30.4 for the group mean. The annual percentage increase was greater than that for the group mean in 1971-72 and 1975-76, the same in 1973-74, and lower in all other years.

I. U. compares more favorably at the assistant professor level. It was above the group mean in all years but the last two. Its rank was second in 1970-71, fourth in 1971-72 and 1973-74, fifth in 1972-73, but dropped to seventh in 1974-75 and to tenth in 1975-76. The percentage increase in mean compensation for assistant professors at I. U. was 22.9 percent over the period, which was somewhat below the increase of 31.2 for the group mean. The percentage increases for mean compensation at I. U. were below those for the group mean in all years.

Table III-1 shows that Purdue University ranked higher than I. U. for the professors and associate professors but lower for assistant professors. For full professors, Purdue was at or a little above the group mean for every year but the last two when it was a little below the group mean. Purdue's rank for full professors was fourth in 1970-71 and 1972-73, third in 1971-72, and fifth in the last three years. The increase over the period was 26.8 percent for Purdue and 30.4 for the group mean. In only one year--1971-72--did Purdue's mean figure increase more than the group mean in percentage terms.

Associate professors at Purdue University received a mean compensation that was above the group mean for all but the last two years. The standing among the group for associate professors was: fourth in 1970-71 and 1972-73, third in 1971-72, fifth in 1973-74, sixth in 1974-75, and seventh in 1975-76. Growth in the means over the period was 25.4 percent for Purdue and 30.4 for the group. Again 1971-72 was the only year when the percentage increase in the mean was greater for Purdue than for the group mean.

Purdue's assistant professors had a mean compensation above that of the group for 1970-71 and 1971-72, even with the group mean in 1972-73, but below the group average in the last three years. In the last three years, Purdue's mean compensation for assistant professors was $600 or more below the group mean. The rank for Purdue rose from sixth in 1970-71 to fifth in 1971-72, but then fell steadily each year to eleventh in 1975-76. The percentage increase over these years was 24.5 percent at Purdue versus 31.2 for the group. Purdue's percentage increase in the mean was greater than that for the group average in 1971-72 and 1974-75 but below the group in the other years.

This group of twelve educational institutions has exchanged information concerning salaries and compensation on a confidential basis for a number of years. This exchange is carried out on a slightly different basis than used by the AAUP in their annual survey. A comparison of the two sets of data shows that they are generally consistent, so no separate discussion of the exchange data is provided.

In summary, the 1975-76 AAUP data show a general worsening of the relative position of Indiana University and Purdue University as reflected by the changes shown in Table III-1 from 1974-75. The standings of both schools fell in all faculty ranks for 1975-76 except for full professors at both universities who remained at the same rank (I. U. moved from eighth to a tie for seventh and eighth place). In 1975-76, neither school had mean compensation above the group average for any of the three professorial ranks. Indiana and Purdue both have above-average percentages for fringe benefits in relation to the other schools in the comparison group. I. U., Purdue, Minnesota, and Wisconsin have percentages for fringes that are close together. The relatively high fringe benefits means that these schools would rank somewhat lower if the comparisons were based on salaries rather than on compensation.

The AAUP reports a median salary, all ranks combined, for most institutions that report to them. The medians for I. U. and Purdue along with the mean of the group medians are in Table III-2. It should be emphasized that these figures are for salaries and not compensation so fringe benefits are excluded. At the beginning of the period, the medians for I. U. and Purdue were below the group means but fairly close. The gap steadily widened during the period so that I. U. was $1,600 below the group figure in 1975-76 while Purdue was $1,400 below. Purdue ranked as high as fifth in 1970-71 but sank to tenth by 1975-76. I. U. ranked sixth in 1971-72 but dropped to eleventh by 1975-76. The percentage increases over the period were 27.7 for I. U., 27.3 for Purdue, and 34.2 for the group mean.

TABLE III-2

MEDIAN SALARY, ALL RANKS COMBINED, I. U. AND PURDUE, 1970-71 to 1975-76

Institution	1970-71	1971-72	1972-73	1973-74	1974-75	1975-76
I. U.	14,100	14,800	15,200	15,800	16,600	18,000
Purdue	14,300	15,100	15,500	15,600	16,900	18,200
Group Mean[a]	14,600	15,400	16,100	16,900	18,000	19,600

[a] This figure is the mean of the medians for the schools reporting. The median for the University of Wisconsin-Madison was not available for 1970-71 and 1971-72; Ohio State was not available for 1971-72; and Michigan State was not available for 1973-74 and thereafter.

Source: AAUP, Summer Bulletin

Ball State University, Indiana State University, and Their Comparison Group

Ball State and Indiana State have a group of similar institutions with which they compare their faculty salaries. Table III-3 contains data for these two schools and the group by academic rank. The list of schools if given in the footnote to Table III-3. These data are from the annual AAUP surveys. The mean compensation of the various institutions is closely grouped in many cases so that rounding to the nearest hundred dollars produces frequent ties. Because of the closely grouped numbers and the rounding, rather dramatic changes in rank may occur even though absolute changes in compensation are not great.

As explained in the footnote to Table III-3, three schools in the group (Eastern Michigan, Western Michigan, and the University of Cincinnati) did not report salaries to the AAUP in 1975-76. The rankings of Ball State and Indiana State were, therefore, not presented in Table III-3. A ranking was determined for both 1974-75 and 1975-76 for the fourteen schools in the group that reported to the AAUP in both years. The text will indicate the change in rankings for Ball State and Indiana State for 1975-76 among these fourteen schools even though the rankings are not shown in Table III-3.

Full professors at Ball State ranked last in the group of seventeen schools in the first three years, ranked sixteenth in 1973-74 and fourteenth in 1974-75. Among the fourteen schools reporting for 1975-76, full professors at Ball State moved up from eleventh to tenth in 1975-76. The mean for the university fell substantially short of the group mean in every year. One reason for the low rank of Ball State is that the AAUP data do not include the State's contribution to the retirement program. The reader should keep this factor in mind through the discussion of Table III-3. We do not know how many other schools in the comparison group might have a similar problem. Salary data are available for

TABLE III-3

FACULTY COMPENSATION DATA: BALL STATE, INDIANA STATE, AND SEVENTEEN-INSTITUTION COMPARISON GROUP[a], 1970-71 to 1975-76

(Rounded to Nearest $100)

Rank and Institution		Year					
		1970-71	1971-72	1972-73	1973-74	1974-75	1975-76
Professor							
Ball St.	- Compensation	$19,100	$20,100	$21,000	$21,800	$22,800	$24,400
	- Rank	17	17	17	16	14	d
	- % increase/yr.[b]	--	5.2	4.5	3.8	4.6	9.0
I.S.U.	- Compensation	20,100	20,800	21,400	22,100	22,600	24,100
	- Rank	13	13	15	14	16	d
	- % increase/yr.	--	3.5	2.9	3.3	2.3	6.6
Group Mean[c]	- Compensation	20,600	21,600	22,000	23,200	24,400	25,700
	- % increase/yr.	--	4.9	1.9	5.5	5.2	5.3
Associate Professor							
Ball St.	- Compensation	15,100	15,800	16,700	17,300	18,100	19,300
	- Rank	17	17	14	15	15	d
	- % increase/yr.	--	4.6	5.7	3.6	4.6	--
I.S.U.	- Compensation	15,900	16,600	17,200	17,900	18,400	19,800
	- Rank	13	11	10	9	11	d
	- % increase/yr.	--	4.4	3.6	4.1	2.8	7.6
Group Mean	- Compensation	16,200	16,900	17,500	18,100	19,000	20,200
	- % increase/yr.	--	4.3	3.6	3.4	5.0	6.3
Assistant Professor							
Ball St.	- Compensation	12,600	13,100	13,700	14,300	15,000	15,900
	- Rank	16	17	16	14	15	d
	- % increase/yr.	--	4.0	4.6	4.4	4.9	6.0
I.S.U.	- Compensation	12,800	13,400	14,000	14,700	15,300	16,600
	- Rank	13	13	12	12	12	d
	- % increase/yr.	--	4.7	4.5	5.0	4.1	8.5
Group Mean	- Compensation	13,200	13,700	14,300	15,000	15,700	16,800
	- % increase/yr.	--	3.8	4.4	4.9	4.7	7.0

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[a] The seventeen institutions are: Ball State, Indiana State, Eastern Michigan, Western Michigan, Central Michigan, Western Illinois, Northern Illinois, Southern Illinois, Illinois State, Eastern Illinois, Bowling Green State (Ohio), Ohio University, Cleveland State, University of Cincinnati, University of Akron, Kent State, and Miami (Ohio) University. In 1975-76, Eastern Michigan, Western Michigan, and the University of Cincinnati did not report salary data to the AAUP.

[b] This percentage increase is the year-to-year increase in mean salary for the rank.

[c] Unweighted.

[d] The ranks for 1975-76 were not comparable to the earlier years because three schools in the group did not report to AAUP for 1975-76. See text.

Source: AAUP, Summer Bulletin.

1973-74 and 1974-75 that show how the rankings change among this group of schools when fringe benefits are excluded.

For associate professors, Ball State was also last during 1970-71 and 1971-72. The university moved up to fourteenth in 1972-73 but fell back to fifteenth in 1973-74 and 1974-75. Among the fourteen reporting schools, Ball State ranked twelfth in both 1974-75 and 1975-76. These figures again show the Ball State mean to be substantially below the group mean although the absolute gap was not as large as for full professors.

Assistant professors at Ball State were sixteenth in 1970-71 and 1972-73, seventeenth in 1971-72, fourteenth in 1973-74, and fifteenth in 1974-75. The school's rank moved up from thirteenth to twelfth in 1975-76 among the fourteen reporting schools. Ball State reported a larger percentage increase for full professors than the group mean (27.7 percent versus 24.8 percent) during the five-year period; likewise, it reported a larger than average increase for associate professors (27.8 percent versus 24.7 percent). The increase for assistant professors was about the same as the group mean (26.2 percent and 27.3 percent).

Indiana State University was generally a few ranks ahead of Ball State in Table III-3 but still ranked rather low in most cases. I.S.U.'s full professors ranked thirteenth in the first two years, dropped to fifteenth in 1972-73, came up to fourteenth in 1973-74, but dropped to sixteenth in 1974-75. The school improved its rank from thirteenth to twelfth in 1975-76 among the smaller group of fourteen schools. The mean for the university was well below the group mean throughout the period. Associate professors at I.S.U. were fairly close to the group mean but remained below it throughout the period. Their rank ranged from ninth to thirteenth in the period 1970-71 to 1974-75. The rank among the fourteen reporting schools was ninth in both 1974-75 and 1975-76.

Assistant professors at I.S.U. ranked thirteenth in the first two years, and twelfth during the last three. They moved from thirteenth to twelfth from 1974-75 to 1975-76 among the fourteen schools in the 1976 group.

I.S.U. had less than the average increase in their mean compensation for full professors (19.9 percent compared to 24.8 percent) over the five-year period. The increase for associate professors was only slightly below the group average (24.5 percent versus 24.7 percent); similarly the increase for assistant professors was a little below the group average (26.2 percent versus 27.3 percent).

As was mentioned previously, the AAUP data do not include the State's contribution to the retirement program at Ball State University. The school's rank among the comparison group would undoubtedly be somewhat higher if the State's contribution were included. A comparison of salaries only (fringe benefits excluded) shows that Ball State's reported fringe benefit percentage is somewhat below average for the comparison schools.

In salaries alone Ball State was eighth in 1973-74 whereas it was sixteenth in the rankings for total compensation of full professors; for 1974-75 its rank was twelfth in salaries instead of the fourteenth in compensation. By contrast, I.S.U.'s full professors ranked lower for salaries than for compensation. Ball State's associate professors also rose in rank--they were eighth in salary compared with fifteenth in compensation for both 1973-74 and 1974-75. I.S.U. again fell one or two places in rank of associate professors. Ball State's assistant professors rose from fifteenth in compensation to eighth in salary in 1974-75. I.S.U.'s assistant professors remained at the same rank in 1973-74 in both salary and compensation. In 1974-75, I.S.U.'s assistant professors were twelfth in compensation and tenth in salary. Comparable salary data for 1975-76 were not available.

Table III-4 contains the median salaries for Ball State, Indiana State, and the mean of the medians for the comparison group of schools. The medians for the two schools and the group mean are remarkedly close together throughout the period. The Ball State median increased about 31 percent over the period, Indiana State increased about 34 percent, and the group mean rose about 33 percent.

Table III-4

Median Salary, All Ranks Combined, Ball State
and Indiana State, 1970-71 to 1975-76

Institution	1970-71	1971-72	1972-73	1973-74	1974-75	1975-76
Ball State	13,000	13,300	14,000	14,700	15,500	17,000
ISU	12,500	13,300	13,900	14,700	15,400	16,800
Group Mean[a]	12,500	13,200	13,800	14,500	15,400	16,600

[a] The group figure is the average (mean of the medians for all schools in the group. See the footnote to Table III-3 for a listing of the schools.

Source: AAUP, Summer Bulletin.

In summary, the AAUP data showed both Ball State and Indiana State with low ranks among the comparison group. Both schools were below the group mean in compensation for all faculty ranks in all five years. The AAUP data, however, apparently understate fringe benefits at Ball State, causing the school to rank lower than it should. An examination of salary alone showed Ball State higher in rank for all faculty categories than for compensation, but it still remained below the group mean in most cases. Indiana State fell for the top two ranks in salary alone in 1974-75, but gained for assistant professors. Percentage increases in compensation over the period were higher than average for all ranks at Ball State. I.S.U. had below average increases for full and associate professors, but assistant professors gained slightly on the group.

Compensation at the Regional Campuses

The relative position of the regional campuses of ISU, IU, and Purdue is somewhat uncertain because of the lack of a satisfactory, well-delineated comparison group. Although they are a diverse group, the regional campuses of other Big Ten schools provide the obvious choice. The AAUP Bulletins have listings for only five schools. The branches of the University of Minnesota are incorporated into one figure for the entire system. Ohio State's branches are two-year institutions and, thus, are not comparable. Those left in the group of regional campuses are ISU, IU, Purdue, Michigan, and Wisconsin. This group of twenty-three campuses was examined for 1971-72 through 1975-76, using information from the Summer Bulletin of the AAUP. Not enough data exist for 1970-71 to start with that year.

In 1971-72, both I. U., and Purdue had compensations that were above the group mean (unweighted) for the three ranks (Table III-5). ISU-Evansville did not report for full professors until 1973-74. Its associate professors were above the group mean, but its assistant professors well below in 1971-72.

The year 1971-72 is not a good one for starting the comparisons. In the fall of 1971, the Wisconsin state legislature approved the merger of the state's two previously independent university systems, the University of Wisconsin and the Wisconsin State University System. Thus, for the 1971-72 academic year, the salaries at the University of Wisconsin "branch campuses" were still at the level they had been while the schools were in the State University system. For the 1972-73 academic year, increases were granted to the Wisconsin branches to allow them to "catch up". While I.U.'s three ranks received percentage increases in salary of 3.9, 4.3, and 5.2 (from professor to assistant professor, respectively), Wisconsin's branches received percentage increases of 11.7, 11.6, and 11.5. Since the next year Wisconsin's branches received more "normal" increases of around 5 percent, the catching up was apparently accomplished in the one year. But the big jump in 1972-73 caused the group figures to reflect this unusual adjustment by the Wisconsin schools.

In 1972-73, professors at I.U.'s regional campuses had average compensations above the group mean. For the other ranks, however, compensation was below the mean by small amounts. Purdue's regional campuses were at or above the group mean for all three ranks. ISU-Evansville was below the 1972-73 group average by only $100 for associate professors but was below by $1,100 for assistant professors.

In 1973-74, I.U.'s professors remained above the group mean, this time by a margin of $1,100. Associate and assistant professors remained below the mean. All ranks at Purdue fell below the group mean in 1973-74. Full professors lost a sizeable amount relative to the group average. ISU-Evansville was well below the group mean for all three ranks in 1973-74.

In 1974-75, the full professors at I.U. regional campuses were slightly above the group mean. The other ranks remained below the group mean as they were in 1973-74. All ranks at Purdue regional campuses were below the group means in 1974-75. ISU-Evansville also continued to trail the group means for all three ranks.

The picture in 1975-76 for I.U. regional campuses was about the same as in 1974-75. Full professors were slightly above the group mean but the other ranks were below. Purdue's regional campuses reported mean compensation slightly above the group mean for assistant professors but slightly below for the other two ranks. ISU-Evansville was still well below the group means for all ranks.

The year-to-year percentage increases in mean compensation by rank are also given in Table III-6. Substantial variations exist among the regional campuses. Some erratic changes appear to result from the fact that certain ranks have so few faculty. Prior to 1975-76, the group mean for all three ranks had a greater percentage increase than for any of the regional campuses except for ISU-Evansville which had a larger increase in 1974-75 for one rank--Associate Professors. In 1975-76, the regional campuses reported larger percentage increases than the group mean in all cases except for a smaller increase for Associate Professors at ISU-Evansville and for full professors at I.U. regional campuses which had the same percentage increase. The percentage increases over the period were substantially less for all the regional campuses in Indiana than for those in Michigan and Wisconsin. This conclusion holds even if the base is 1972-73 to eliminate the large increase received by the Wisconsin schools in that year.

Analysis of Salaries at Vincennes and Other Junior Colleges

An evaluation of the current situation with respect to faculty salaries at Vincennes and other junior colleges of the Midwest is hampered by a lack of data. Several studies are available, but they frequently measure different items (in some cases salary, in others compensation; sometimes by rank, sometimes by unranked faculty) for different schools for different years. Thus, no solid judgments may be made in this area on the basis of the available information. Several of these studies are drawn upon in the subsequent discussion in an effort to provide some useful impressions.

The goal is to get a rough idea of how faculty salaries at Vincennes compare with those at junior colleges in the nearby states of Illinois, Michigan, Ohio, and Kentucky. But comparisons are uncertain because of wide variations in junior

TABLE III-5

MEAN COMPENSATION BY RANK, REGIONAL CAMPUSES: I.U., PURDUE, AND GROUP MEAN, 1971-72 TO 1975-76[a]

Rank and Year	Twenty-Two School Group[b]		I.U. Regional Campuses[c]		Purdue Regional Campuses[d]		ISU-Evansville	
	Compensation	% Increase	Compensation	% Increase	Compensation	% Increase	Compensation	% Increase
Professors								
1971-72	$20,300	---	$22,100	---	$21,600	---	---	---
1972-73	21,600	6.4	21,900	-0.9	22,200	2.8	---	---
1973-74	22,400	3.7	23,300	6.4	21,900	-1.4	19,800	---
1974-75	23,700	5.8	23,900	2.6	22,600	3.2	20,800	5.1
1975-76	25,200	6.3	25,400	6.3	25,000	10.6	22,600	8.7
Associate Professors								
1971-72	16,400	---	17,200	---	16,700	---	16,700	---
1972-73	17,300	5.4	17,200	-0-	17,400	4.2	17,200	3.0
1973-74	18,000	4.0	17,800	3.5	17,800	2.3	17,200	-0-
1974-75	19,100	6.1	18,500	3.9	18,700	5.1	18,300	6.4
1975-76	20,300	6.3	19,900	7.6	20,400	9.1	19,200	4.9
Assistant Professors								
1971-72	13,800	---	14,100	---	14,300	---	12,900	---
1972-73	14,600	5.8	14,500	2.8	14,800	3.5	13,500	4.7
1973-74	15,200	4.1	15,000	3.4	15,000	1.4	13,800	2.2
1974-75	16,100	5.9	15,500	3.3	15,700	4.7	14,500	5.1
1975-76	17,100	6.2	16,700	7.7	16,900	7.6	15,600	7.6

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[a] Some campuses did not report figures for each rank every year.

[b] Includes regional campuses of Indiana University, Indiana State University, Purdue University, Michigan, and Wisconsin. The mean is unweighted.

[c] Fort Wayne, IUPUI, Kokomo, Northwest, South Bend, and Southeast.

[d] Calumet, North Central, and Fort Wayne.

Source: AAUP, Summer Bulletin.

college systems among the states in size, development, organization, and administration. For example, Illinois has a complex system of thirty-eight districts covering the entire state, each with a community college. The City Colleges of Chicago are in the system. Thus, such a system is probably not comparable with the situation found in Indiana.

The Community College System of the University of Kentucky has conducted an annual survey of faculty salaries at selected Midwestern and Southern "benchmark" institutions. Unfortunately, Kentucky did not conduct the survey for 1975-76. The average salaries for all ranks as reported in these surveys were presented in the 1975 Economic Indicators study. The number of schools in the survey varied from nineteen to twenty-eight, with Vincennes University being among the two or three largest schools. In average salary for all ranks, Vincennes ranked high--fourth and fifth--in the first two years (1970-71 and 1971-72). It dropped sharply in 1972-73 to fifteenth, rose in 1973-74 to eighth, and dropped again in 1974-75 to thirteenth. For the years 1972-73 through 1974-75 Vincennes was at or slightly above the median for all schools in the survey. The Illinois schools were consistently at the top in salaries. But the great fluctuations in rank and the erratic behavior of the reported salaries at several of the institutions raise questions as to whether the data were compiled on a consistent basis throughout the period.

In comparing salaries by professorial rank, Vincennes fared much worse than in the overall average faculty salary. Vincennes was the only one of these schools to have many full professors. Salaries by rank were published in the Kentucky report for only 1972-73 and 1973-74. In both years Vincennes had the lowest mean salary for full professors among the few schools that reported for this rank. Vincennes reported twenty-five full professors in 1972-73 and twenty in 1973-74, while no other school in the survey had more than two full

TABLE III-6

AVERAGE COMPENSATION BY RANK AND PERCENTAGE INCREASES, VINCENNES AND COMPARISON GROUP, 1971-72 TO 1975-76

Professorial Rank	1971-72	1972-73	1973-74	1974-75	1975-76
Professor					
Vincennes U.[a]	$13,100	$13,700	$14,700	$15,500	$17,600
Group Average[b]	22,400	21,400	21,800	21,600	22,300
Annual % increase					
Vincennes	---	4.6	7.3	5.4	13.5
Group Average	---	-4.5	1.9	-1.0	3.2
Associate Professor					
Vincennes U.	11,100	11,400	12,000	13,200	14,100
Group Average	16,300	16,500	17,600	18,600	19,100
Annual % increase					
Vincennes	---	2.7	5.3	10.0	6.8
Group Average	---	1.2	6.7	5.7	2.7
Assistant Professor					
Vincennes U.	10,300	10,400	10,900	11,700	13,400
Group Average	13,400	13,800	14,300	15,300	16,000
Annual % increase					
Vincennes	---	1.0	4.8	7.3	14.5
Group Average	---	3.0	3.6	7.0	4.6
Instructor					
Vincennes U.	9,100	9,000	9,800	10,900	12,500
Group Average	11,300	11,500	12,000	12,800	13,600
Annual % increase					
Vincennes	---	-1.0	8.9	11.2	14.7
Group Average	---	1.8	4.3	6.7	6.3

[a] Vincennes University furnished the average salaries by rank and an overall average percentage of salaries of all faculty for fringe benefits. The compensation is the salary plus the estimated cost of fringe benefits. This procedure overstates compensation for full professors and understates it for instructors because the cost of fringes as a percentage of salary is lower for the higher rank and increases for the lower ranks.

[b] Only two of the twenty-three schools reported full professors' salaries in 1971-72. The two schools were in Illinois and generally had the highest salaries of all seventeen schools. In 1975-76, seven schools reported the average salary for full professors.

Source: AAUP Bulletin, Summer Issues and Vincennes University.

professors. Vincennes also reported more associate professors than any other school for both these years although several others had substantial numbers. Vincennes ranked 17th out of 22 in average salary for associate professors in 1972-73 and 10th out of 21 in 1973-74. In both years, the University was near the middle in salary for assistant professors. Thus, Vincennes had much more than the group average share of faculty in the full and associate professor ranks which held up its standing in the overall average faculty salary. But the school ranked much lower for individual professorial categories.

Many community and junior colleges now report salaries and compensation in the annual AAUP survey. A group of twenty-three schools (counting the Kentucky community college system as one school) from states around Indiana was selected from among those reporting compensation by professorial rank annually to the AAUP since 1971-72. Of these seventeen schools, five were in Illinois, fifteen in Ohio, two in Michigan, and one in Kentucky which was the aggregate for the entire community college system in that state. Vincennes University does not participate in the AAUP survey, but it furnished average salary by professorial rank for the years 1971-72 to 1975-76. The average salaries for Vincennes were increased by the estimated percentage for fringe benefits which the school supplied. Table III-7 contains estimated average compensation by rank for Vincennes and the group of twenty-three schools.

The average level of compensation for Vincennes is substantially below the average for this group of schools in all ranks. The percentage increases for Vincennes, however, have generally been greater than for the group. The group averages are heavily influenced by the especially high compensation paid by the Illinois and Michigan schools. But Vincennes appears to be well below the averages of the Ohio schools and slightly below those for the Kentucky system of community colleges. Thus, Vincennes appears to have lower average compensation in each rank than those schools in Ohio and Kentucky that it might consider its closest competitors.

Indiana Vocational Technical College

In the previous studies, we have not had a comparison group for instructors' salaries at IVTC. This institution was rather new and did not have data for enough years to permit comparisons over a reasonable period of time. Also, it is not easy to identify an appropriate comparison group. IVTC's primary competitors for instructors are probably other public and private schools with technical training programs as well as the private sector of the economy. We selected two groups to use for comparison purposes: (1) the two-year colleges without faculty ranks in the states of Illinois, Iowa, Michigan, Minnesota, and Ohio plus the community college system of Kentucky (which does have ranks); and (2) ten occupational categories that appear to contain potential instructors for various programs of IVTC and for which private-sector salary data were available from surveys conducted by the U. S. Bureau of Labor Statistics. For these two groups, we obtained an average annual salary on which to base an index going back to 1971-72 (See Table III-7).

IVTC was not able to furnish comparable data on average annual salaries for their instructors for all past years to include them in this study. IVTC is planning to prepare these averages so that they will be available later; it was able to provide average instructional salaries for 1975-76 and 1972-73. The increase over that three-year period was small--a little less than 3 per cent. By contrast, the data on only continuing instructors at IVTC show substantial annual increases. The number of continuing instructors was very small relative to total instructors of the college which means that turnover is high and that the average salary for all instructors probably will show small increases from year to year. In addition, the limited data available suggest that salary levels at IVTC are considerably below those for the comparison groups. The same conclusion is suggested in data for 1975-76 obtained by IVTC from a sample of ten other accredited publicly supported technical schools or institutes in other states.

TABLE III-7

Indexes of Average Salaries, IVTC Comparison Groups--Private Sector Group[a] and Two-Year Colleges[b], FY 1972-FY 1976 (FY 1972 = 100)

Year	Private Sector		Two-Year Colleges	
	Index	Per Cent Change	Index	Per Cent Change
1971-72	100.0	----	100.0	----
1972-73	106.8	6.8	114.2	14.2
1973-74	113.6	6.4	122.6	7.4
1974-75	125.8	10.7	131.1	6.9
1975-76	134.2	6.7	139.6	6.5

[a] The comparison group index was based on the unweighted average salary for ten occupational categories: Secretary Class A, Drafter Class A, Computer Operator Class A, Electronics Technician Class A, Registered Industrial Nurse, Maintenance Mechanic--Motor Vehicle, Stenographer--Senior, Accountant III, Keypunch Supervisor IV, and Engineering Technician V. The salaries for these occupations were from U. S. Bureau of Labor Statistics, Area Wage Surveys (Indianapolis) and National Survey of Professional, Administrative, Technical, and Clerical Pay.

[b] Two-year colleges without faculty rank in Illinois, Iowa, Michigan, Minnesota, and Ohio plus the Community College System of Kentucky (which has ranks).

Comparisons Over Longer Periods with Other Groups and Professions

Unfortunately, only limited data are available for other professions, such as dentists, doctors, attorneys, accountants, architects, and so on. The National Survey of Professional, Administrative, Technical, and Clerical Pay (published by the Bureau of Labor Statistics) reported annual salary increases over six years (1970-76) of from 5.5 to 7.8 percent for chief accountants, attorneys, engineers, buyers, and personnel directors. With fringe benefits added, the increases for these professional groups would undoubtedly have been even greater. Between 1970-71 and 1975-76, the annual increase in compensation (which is greater than for salaries) for faculty of the Indiana postsecondary educational institutions has generally averaged between 4 and 5 percent. These data, sketchy as they are, strongly suggest that other professions have experienced substantially greater increases in pay over the last several years than have faculty of the Indiana educational institutions.

Over the last 46 years, faculty salaries in U. S. higher education have gone through periods when they rose less and when they rose more than earnings in all industries (See Table III-7). During the period 1930-34, faculty salaries on the average fell 3.1 percent per year while earnings in all industries fell 5.3 percent. During the remainder of the 1930's, faculty salaries lost ground as they rose 1.6 percent per year compared to 3.1 percent for all industries. Salaries in all industries rose sharply during World War II (1940-44) to record an annual increase of 12.2 percent which compares with a much smaller annual increase of 1.5 percent for faculty salaries. From 1944 to 1950, the annual increases were about the same: 6.4 percent for faculty salaries and 6.3 percent for all industries. The annual average increases were the same for the decade of the 1950's--4.7 percent for both. Faculty salaries rose more slowly during the first half of the decade but more rapidly in the last half. From 1960-67, the golden era for higher education, faculty salaries rose more rapidly than salaries for all industries--an annual rate of 5.8 percent versus 4.0 percent. Over the entire period covered in Table 7, faculty salaries rose at an annual rate of 3.4 percent which was somewhat less than the 4.1 percent for earnings in all industries.

The comparisons for 1968 to 1976 are in Table III-8. The comparison group is now all employees of nonagricultural establishments in the United States (rather than employees of all industries as in Table 7). Also, the comparisons are available for both salaries and compensation. Faculty salaries rose slightly more than wages and salaries for nonagricultural employees for 1968-69 over 1967-68 (6.4 percent versus 6.3 percent). Throughout the remainder of the period, nonagricultural wages and salaries rose more rapidly than faculty salaries. The differential was quite large in 1971-72, and remained between 1.5 and 1.7 percentage points each year thereafter. For the entire period, faculty salaries grew by 50.8 percent compared to 63.7 percent for nonagricultural employees.

Faculty compensation increased more than compensation for nonagricultural employees in the first two years of Table 8. The increases were the same (6.2 percent) in 1970-71, but thereafter nonagricultural employees had larger gains each year than faculty. Over the entire period, faculty compensation grew by 60.1 percent whereas compensation of nonagricultural employees grew by 70.1 percent. Faculty, thus, fared a little better in terms of compensation than in terms of salary although the difference is not great.

Table III-7

Average Annual Percentage Rates[a] of Change for Faculty Salaries and Earnings in All Industry, 1930-1967

Period	Faculty Salaries	Earnings in all Industries
1930-34	-3.1	-5.3
1934-40	1.6	3.1
1940-44	1.5	12.2
1944-50	6.4	6.3
1950-54	5.0	5.5
1954-60	4.5	4.2
1960-67	5.8	4.0
1930-67	3.4	4.1

[a] The rates are compound ones for the periods indicated.

Source: June O'Neill, Resource Use in Higher Education, Carnegie Commission on Higher Education, 1971, p. 26. (The faculty salaries for 1930 through 1957 were median salaries in large public institutions from S. G. Tickton, Teaching Salaries Then and Now--A Second Look, Fund for the Advancement of Education, New York, 1971; for 1957-58 to 1961-62, median salaries for all institutions from National Education Association; from 1961-62, the salary data are from AAUP; earning in all industries were from U. S. Department of Commerce, Historical Statistics and Survey of Current Business.)

Table III-8

Annual Rates of Increase for Faculty Salaries
and Wages and Salaries of
Nonagricultural Employees, 1968-1976

	Rates of Change			
	Salaries		Compensation	
Academic year over previous year	Faculty	Nonagr. empls.	Faculty	Nonagr. empls.
1968-69	6.4	6.3	7.2	6.6
1969-70	5.8	5.9	7.1	6.3
1970-71	5.4	5.6	6.2	6.2
1971-72	3.5	6.1	4.3	6.6
1972-73	4.1	5.8	6.5	6.7
1973-74	5.1	6.7	4.4	7.2
1974-75	5.6	7.1	6.4	7.9
1975-76	6.0	7.3	6.4	7.5

Source: Calculated from data in Table 26, AAUP, "Nearly Keeping Up--Report on the Economic Status of the Profession, 1975-76" (Reprint of the report that will appear in the 1976 summer issue of the AAUP Bulletin.)

A consistent series for median faculty salary, all ranks combined, was available from published AAUP data for 1967-68 to 1975-76 for Ball State U., Indiana State U., Indiana U., and Purdue U. These data suggest that the median faculty salaries for these four Indiana schools followed the national trend rather closely over the years since 1967-68. The unweighted averages of the medians for the four schools increased by 42.6 percent over the period while the national average increase was nearly the same (41.9 percent). The year-to-year changes were not always close together, but the changes over the eight years were almost identical for the Indiana schools and for the nation. The percentage increases for each school showed more variability, of course, than did the average for the four schools. Even though the comparisons between the Indiana schools and the U. S. median are not highly refined, they suggest that the national figures fairly portray what has happened to median faculty salaries in Indiana over a substantial period of time.

Although the comparisons discussed above have involved faculty in higher education and either all employees or all nonagricultural employees, a better comparison would have been between faculty and other professional occupations. These other professional occupations are the more likely alternatives for faculty and for persons who are potential faculty members.

CHAPTER IV

WAGE AND SALARY COMPARISONS FOR OCCUPATIONAL CATEGORIES

In the market for administrative-professional and clerical-service employees, Indiana postsecondary educational institutions compete primarily with local and regional employers in private industry and various levels of government rather than with other postsecondary educational institutions. These occupational groups are much more diverse than the academic group, and three occupational categories were chosen from each group to represent all employees in the group. This choice was partly constrained by the availability of data on salaries for comparable occupations in the private and public sectors. The categories chosen were Secretary (I), Janitor, and Carpenter (Maintenance) from the clerical-service group; Accountant (II), Computer Programmer (Class B), and Buyer (II) from the administrative-professional group. These categories are among those used in the national wage surveys conducted by the Bureau of Labor Statistics. Definitions of each category are presented in Appendix B to this chapter.

The Indiana institutions provided data for salaries of their employees who most nearly fitted these designated categories. Data for 1970-71 to 1974-75 were available from the two previous studies; data for 1975-76 are added to the series in this study. Data for wages of janitors and carpenters in the private sector were from the U.S. Bureau of Labor Statistics (BLS) bulletins, Area Wage Surveys, Selected

Metropolitan Areas (Louisville, Chicago, Cincinnati, Indianapolis, and South Bend); monthly salaries for the other categories were from BLS National Survey of Professional, Administrative, Technical and Clerical Pay. Appendix A provides more information on those sources. Salaries for comparable occupations in Indiana state government were obtained from the Indiana Department of Administration, Division of Personnel. Federal salary data were provided by the Indianapolis office of the U.S. Civil Service Commission. Federal hourly wages for janitors and carpenters are based on wage surveys taken in the Indianapolis area; salaries for the other occupations are set on a national basis.

State and federal government salary data are from a particular pay schedule effective during all or most of the fiscal year and pertain to the middle or most representative step within each occupational category. Data for the Indiana postsecondary educational institutions and the private sector represent actual averages of salaries for all employees included in each category. The data for state and federal employees may thus be biased to the extent that employees are not distributed evenly around that middle step; the direction of any such bias is not known. Since we are primarily concerned with changes in wages and salaries, however, the analysis need only rest on the much less rigorous assumption that no significant changes have occurred in the distribution of employees over the various steps during the study period.

The national surveys of wages and salaries are conducted in a particular month of each year. Data for a fiscal year are therefore those for a given month in that year. Each of the surveys is conducted in the same month each year. The wages for carpenters and janitors are unweighted averages for the five metropolitan area surveys (Louisville, Chicago, Cincinnati, Indianapolis, and South Bend). Federal pay schedules are those effective in December of each year. For the state government, the November 1970 schedule was used for fiscal year 1970-71 and the November 1971 for the following two years, since no changes were made until July 1973. This latter schedule was used for fiscal 1973-74 and the schedule released in April 1974 was used for fiscal 1974-75. The July 1975 schedule, as modified by the job reclassifications of February, 1976, was used for fiscal 1975-76. Additional information on these sources and the methodology used in the comparisons is in Appendix A.

Table IV-1 contains indexes of average salaries for the six occupational groups for the educational institutions, the private sector, state government, and the federal government. The indexes were constructed by dividing each year's data by the fiscal year 1970-71 salary for that category. Each index therefore clearly shows the relative change in salaries for that category since 1970-71.

Indiana educational institutions ranked at or near the bottom for all three clerical-service categories. Secretaries employed by these institutions were last in all years except 1975-76 when they moved slightly ahead of the federal index. State government has shown greater increases since 1970-71 than the others. The indexes for the educational institutions, the private sector, and the federal government have been close together during most of the period although the private sector pulled away from the other two in 1975-76.

TABLE IV-1

INDEXES OF AVERAGE MONTHLY SALARIES FOR SELECTED OCCUPATIONS AND INSTITUTIONS, 1970-71 to 1975-76 (1970-71 = 100)

Occupational Category and Year	Indiana Postsecondary Institutions (I)	Indiana State Government (II)	U.S. Private Sector (III)	Federal Civil Service (IV)
Secretary				
1970-71	100.0	100.0	100.0	100.0
1971-72	101.1	105.0	104.7	105.4
1972-73	108.1	105.0	110.3	110.9
1973-74	112.2	125.0	114.1	116.0
1974-75	120.0	135.0	122.5	122.3
1975-76	129.5	146.8	133.5	128.5
Janitor				
1970-71	100.0	100.0	100.0	100.0
1971-72	104.8	105.5	106.5	105.6
1972-73	111.7	105.5	111.6	115.8
1973-74	116.3	121.6	118.3	125.9
1974-75	120.1	136.1	126.9	152.3
1975-76	128.5	142.1	139.4	165.9
Carpenter				
1970-71	100.0	100.0	100.0	100.0
1971-72	106.6	104.3	108.5	105.6
1972-73	112.3	104.3	116.7	115.8
1973-74	116.4	120.2	124.9	122.1
1974-75	124.6	129.2	135.0	145.6
1975-76	138.4	140.9	146.1	157.3
Accountant				
1970-71	100.0	100.0	100.0	100.0
1971-72	106.1	104.6	104.3	105.5
1972-73	110.2	104.6	107.9	110.9
1973-74	114.4	119.0	113.0	116.1
1974-75	118.9	128.1	125.1	122.5
1975-76	128.2	140.7	131.3	128.7
Programmer				
1970-71	100.0	100.0	100.0	100.0
1971-72	110.4	104.8	104.8	105.5
1972-73	116.1	104.8	107.4	110.9
1973-74	124.4	114.2	115.3	116.1
1974-75	130.6	122.7	121.0	122.5
1975-76	150.7	128.4	129.7	128.7
Buyer				
1970-71	100.0	100.0	100.0	100.0
1971-72	105.4	104.9	105.2	105.5
1972-73	109.8	104.9	111.6	110.9
1973-74	113.6	119.4	117.0	116.1
1974-75	124.6	128.6	128.4	122.5
1975-76	132.0	140.3	136.9	128.7

Janitors and carpenters at the educational institutions have fared worse than their counterparts at the other employers, with increases of 28.5 and 38.4 per cent, respectively, over the four-year period. Federal employees in these categories have had the greatest gains (65.9 per cent and 57.3 per cent respectively). Janitors employed by the state have fared second best (following the federal employees) with the private sector a close third and the educational institutions a rather distant fourth. Carpenters employed by the state and by the educational institutions have received nearly the same increase over the period. Carpenters in the private sector fared better but trailed those in the federal sector in terms of increases since 1970-71.

Among the administrative-professional categories, programmers at the educational institutions have received substantially greater salary increases (50.7 per cent) since 1970-71 than their counterparts in the other sectors (28.4 per cent, 29.7 per cent, and 28.7 per cent). The increases have been nearly the same for state government, the private sector, and the federal government. Accountants have fared best in state government, second best in the private sector, and about the same in the educational institutions and the federal government. Buyers employed by state government had the greatest salary increases (40.4 per cent), those in the private sector had the next greatest (36.9 per cent), followed by those in the educational institutions (32.0 per cent) and the federal government (28.7 per cent). Thus accountants and buyers employed by the educational institutions fared poorly in comparison with their counterparts in Table IV-1 while programmers employed by the educational institutions fared better than their counterparts.

The continuing employees of the educational institutions in these six categories undoubtedly received larger salary increases than those indicated in Table IV-1 which are averages for all employees. Chapter II indicates that increases in compensation (salaries plus fringe benefits) for the various groups were somewhat greater than the increases shown in Table IV-1. Data were not available on salaries and fringe benefits for continuing employees in state government, the private sector, and the federal government, so a comparison with continuing employees of the educational institutions was not possible. The collection of such data would be a major undertaking and far beyond the scope of this study.

Appendix Table IV-3 contains the monthly salaries from which the indexes in Table IV-1 were calculated. A comparison of the absolute salaries requires caution. Differences among institutions or sectors could be the result of imperfectly matching the occupational categories. For instance, one university reported that its buyers did not match the Buyer II model that was used to define the category. Its buyers had more duties and responsibilities than Buyer II and also had higher salaries. Thus, differentials in salary levels for a given occupational category could be the result of imperfect matching of employees or they could in whole or part reflect real differences for identical occupations.

Three of the series in Table IV-1 were changed from those used in the 1975 report. For state government, the shift was from Janitor I to Janitor II. Janitor II is closer to the janitor category used by the educational institutions for which data were available. Janitor I is the entry level for that occupational class in state government. The effect of this shift is to raise the salary level for janitors employed by the state as shown in Table IV-2. The indexes in Table IV-1, which show the increases in salary, changed very little for the janitor category for state government with this shift to Janitor II.

The other two shifts involve employees of the educational institutions. The first shift is in the accountant category. In the previous studies, the salary level was the minimum salary for a junior accountant. The new data represent average salaries for most of the accountants employed by the institutions. The new figures show a higher salary level than the old figures and also show a somewhat greater increase since 1970-71. The new figures are clearly superior to the old ones. The last change involves programmers and is quite minor. The new figures now represent the average for IU and Purdue only; the earlier series had included figures for some years for other institutions but they either did not have this class of programmer every year or for some other reason were unable to provide a continuous salary series since 1970-71 for this occupation. The new figures are slightly lower than the old ones, and they should be more reliable than the old ones.

Appendix Table IV-4 shows the year-to-year percentage increases in monthly wages. It could be used with Table IV-1 in the text of the chapter to compare wage changes each year.

Appendix Table IV-5 compares average monthly wages each year for each occupation by expressing the wages in the Indiana educational institutions, in the private sector, and in the federal civil service as percentages of those in Indiana state government. These figures permit an easier comparison of the wage levels among these different sectors and institutions, but the caveats mentioned above continue to apply in any comparison of salary levels among the four sectors of Table IV-1.

An Expanded Sample

The three administrative-professional and the three clerical-service occupational categories used in the preceding analysis were chosen initially because they seemed to be representative of the broader occupational groups of the educational institutions and because they were included in national wage surveys of the private sector. By including only these six occupations, it was possible to obtain comparable data for the private sector, the federal government, the state government, and the educational institutions. In the 1975 report, we expanded the sample of occupational categories for the comparisons between the Indiana educational institutions and the rest of the state government. Data for the private sector were not available for this larger sample, and no attempt was made to include federal data. We have included the expanded sample in this report and have obtained more recent data.

The Indiana State Department of Administration, Personnel Division, selected forty-one occupational categories in state government and provided the mid-grade wages for November 1972 and November 1975 for each category along with the number of employees for 1975. The state's job descriptions for each of the forty-one categories were sent to the six educational institutions, which then supplied comparable data for those categories in which they had employees. The educational institutions provided mean wages rather than wages for a mid-grade in each of the categories. For just three years, either mean wage or the mid-grade wage should realiably represent the wage change over the period. Shifts in the distribution of employees by grade within a category are not apt to be significant in such a short time span. The sample included 7,500 state employees and nearly 4,500 employees of the educational institutions.

For this larger sample, employees of the Indiana state government experienced greater pay increases from November 1972 to November 1975 than their counterparts in the postsecondary education institutions. The previous discussion of the six occupational groups also showed a similar differential for most categories (see appendix Table IV-3), but the analysis of the larger and broader sample shows the differential to be greater. The state government employees received increases averaging 9.7 percent per year between 1972 and 1975 compared to 6.2 percent for educational employees (excluding faculty). The overall averages for both groups were weighted by the number of employees or positions in 1975.

Table IV-2 shows the average monthly salaries and annual rates of increase for three occupational groups--labor and trades, clerical, and professional. State government salary increases exceeded those of educational institutions in all three categories, particularly clerical employees, whose annual rate of growth was 10.9 percent, compared to 6.1 percent for the educational institutions. The differential was also substantial for labor and trades--8.2 percent versus 6.3 percent.

TABLE IV-2

AVERAGE MONTHLY SALARIES AND PERCENTAGE CHANGES FOR OCCUPATIONAL GROUPS, INDIANA STATE GOVERNMENT AND EDUCATIONAL INSTITUTIONS, 1972-1975

	Number 1975	Avg. Monthly Salary, Nov. 1972	Avg. Monthly Salary, Nov. 1975	Percent Change 72-75	Annual Rate of Growth
All Labor, Trades	4341	491	610	24.1	7.5
Indiana State Government	2704	495	626	26.5	8.2
Postsecondary Education Inst.	1637	486	583	20.1	6.3
All Clerical	6896	456	593	29.9	9.1
Indiana State Government	4359	442	603	36.4	10.9
Postsecondary Education Inst.	2537	481	575	19.5	6.1
All Professional	506	1023	1276	24.8	7.7
Indiana State Government	336	1056	1338	26.8	8.2
Postsecondary Education Inst.	170	958	1154	20.4	6.4
All Occupations	11,888	494	628	27.3	8.4
Indiana State Government	7527	489	644	31.7	9.7
Postsecondary Education Inst.	4361	502	601	19.8	6.2

Source: Appendix Tables IV-6 and IV-7.

Preliminary figures. Data from IVTC and Vincennes University not included.

The average annual increase for professional employees was 8.2 percent for state government and 6.4 percent for the educational institutions.

A comparison of actual salary levels may not always be meaningful because of the problem of matching categories precisely. Differences in salary levels could result partly or largely from imperfectly matching the occupational categories. The average monthly salaries for all occupations were not greatly different between state government and the educational institutions in 1972 ($502 for the educational institutions and $489 for state government). The state government average was substantially higher in 1975 because of the greater average annual increases ($644 vs. $601). Of the three broad classes in Table IV-2, the average salary for the educational institutions was higher in 1972 than state government for clerical but was lower for the other two. By 1975 the educational institutions were lower for all three broad groups.

Conceivably the averages of the educational institutions could have been biased downward relative to state government if the institutions experienced greater turnover. High turnover rates will tend to reduce the average for a category as terminating employees are commonly replaced by lower-paid new employees. But a downward bias in salary increases would arise (if educational institutions had a higher turnover rate) only if the turnover rate increased dramatically between 1972 and 1975. If it was about the same in both years, whatever downward influence it had would have been reflected in the average salaries for both years. We know of no reason to expect the turnover rate to have been higher in 1975 than in 1972. In fact, the weaker job markets that existed in 1975 relative to 1972 would probably have caused turnover to be less in 1975.

Appendix Tables IV-6 and IV-7 give the details for the forty-one individual occupation categories for state government and for the educational institutions combined. In a few cases, either no employees or positions were reported so the numbers across the line are all zero. For the categories where comparisons were possible, the educational institutions reported a greater annual salary increase in only two (Programmer II and System Analyst II). In all others, state government reported the larger increase although the growth rates were close together for a few categories.

Fringe Benefits

The previous sections of this chapter considered only salaries and not compensation which includes salaries plus fringe benefits. In the chapters on continuing employees and on faculty, nearly all the data were for compensation which added to salaries the employers' costs for such fringe benefits as group life and medical insurance; disability insurance; unemployment insurance; retirement programs; and old age, survivors, and disability insurance. No attempt was made to include employers' costs for paid rest periods, vacations, civic and personal leave time, and sick leave. Nor did the estimates for fringe benefit costs include benefits in kind such as free parking, subsidized meals, reduced tuition, and so on.

The institutions of higher education probably have more generous fringe benefits than state employees although the fringe benefit packages vary considerably among institutions and among occupational groups in individual institutions. Most of the recent increases in fringe benefit costs to the educational institutions have resulted from the rise in the OASDHI tax; other benefit programs have not changed much since 1971. The same generalization probably holds for state employees. If so, then including the employer costs of fringe benefits with salary would not significantly affect the relationship of rates of change between state government and the institutions as reported in the previous section of this chapter.

The May 1975 Monthly Review of the Federal Reserve Bank of Kansas City contained a survey of data on employee fringe benefits in the private sector of the economy. The latest data in the survey were for 1973 in which year fringes outside of payroll (employer contributions for social insurance, company benefit plans, and miscellaneous employee benefits) amounted to about 20 percent of actual payroll. This figure does not include estimated employer costs for paid rest periods, vacations, civic and personal leave, sick leave, etc. These data suggest that fringe benefits in the private sector are not greatly different from the state educational institutions on the average. In both cases, benefits have been increasing faster than salaries. And the most rapidly growing component of benefits has been social security tax payments (OASDHI). Private employers as well as the educational institutions have benefit packages that differ substantially, but the aggregate averages and changes over time in recent years are apparently similar.

The Bureau of Labor Statistics publishes annual indexes for average hourly earning and for average hourly compensation for all persons employed in the private sector of the economy. Compensation rose more rapidly than earnings in 1972 (6.7 percent vs. 6.3 percent), in 1973 (8.7 percent vs. 6.7 percent) and in 1974 (10.7 percent vs. 9.4 percent). In 1975, however, the earnings index rose slightly more than the compensation index (7.9 percent vs. 7.8 percent). Conceivably the 1975 data portend the end of a period when fringe benefits were increasing more rapidly than wages or salaries. Some observers have suggested that this reversal will continue for a few years at least.

APPENDIX A
CHAPTER IV

SOURCES OF DATA AND METHODOLOGY FOR WAGE AND SALARY COMPARISONS

The occupational definitions and private sector data for Accountant (II), Buyer (II), and Secretary (I) are taken from the U.S. Bureau of Labor Statistics (BLS) publication, National Survey of Professional, Administrative, Technical, and Clerical Pay. These surveys are taken in March of each year, so data used for fiscal year 1976 were actually for March 1976. The BLS publication, Area Wage Survey, Selected Metropolitan Areas, was the source of occupational definitions and private sector data for Computer Programmer (Business, Class B), Janitor, and Carpenter (Maintenance). The wages for these three categories were the unweighted averages of those in five metropolitan areas: Louisville, Chicago, Cincinnati, Indianapolis, and South Bend. If the survey distinguished between wages for males and females, only the figures for males were used for the three categories.

The area wage surveys are taken in various months of the year. The Bureau of Labor Statistics does conduct the survey for a given city on the same month each year. For instance, the Indianapolis survey is conducted in October of each year; the Louisville survey is conducted in November; and so on. The data for fiscal 1975-76 were from the area wage surveys of May 1975 for Chicago; November 1975 for Louisville; October 1975 for Indianapolis; February 1975 for Cincinnati as projected to February 1976 by assuming that the percentage increase over the year was the same as the average for Chicago, Louisville, and Indianapolis; and March 1975 for South Bend as projected to March 1976 using the same procedure as for Cincinnati.

The state wage and salary data are from the State Salary Plan and Class Index issued by the Indiana State Department of Administration. Average salaries paid in each category were not available; the data pertain to the salary level for the middle step in each category. Mr. Tom Neely, Personnel Examiner in the Department of Administration, estimated the average salary step for each category used in the 1974 study and the same steps were used for 1974-75 and 1975-76. The salary plan issued in November 1970 was used for fiscal 1970-71, and the plan issued in November 1971 was used for both 1971-72 and 1972-73 since there were no changes during that period. The July 1973 plan was used for fiscal 1973-74; the April 1974 plan for fiscal 1975 year, and the salary scale existing in February 1976 (after adoption of a new classification system) was used for fiscal 1976.

Federal civil service data were from the U.S. Civil Service Commission in Indianapolis. Material from House Document No. 93-162 provided the basis for the choice of the fourth step in the grade to represent the average salary for the grade. Salary levels are set on a national basis, whereas hourly wage rates for carpenters and janitors are set on a local level so as to be 'competitive' with similar jobs in the private sector. The wage rates for carpenters and janitors used in this study were based on an Indianapolis area wage survey conducted annually by the Naval Avoinics Administration, Indianapolis, Indiana, in setting the Indianapolis general wage schedule for federal employees. The middle step was used to represent wages for the entire categories.

Personnel administrators at Indiana University, the Indiana State Department of Administration, and the U.S. Civil Service Commission in Indianapolis provided advice on matching the occupational categories among the comparison groups. Perfect matching, however, was not possible and some differences in the levels of pay will be due to incorrect matching of categories. The relative changes, of course, should be reliable. All wage and salary figures were converted into monthly salary equivalents by multiplying hourly pay by 2080/12, weekly pay by 52/12, biweekly pay by 26/12, and annual pay by 1/12.

APPENDIX B
CHAPTER IV
OCCUPATIONAL DEFINITIONS

Accountant II

General characteristics. At this continuing developmental level, the professional accountant makes practical applications of technical accounting practices and concepts beyond the mere application of detailed rules and instructions. Assignments are designed to expand his practical experience and to develop his professional judgment in the application of basic accounting techniques to simple professional problems. He is expected to be competent in the application of standard procedures and requirements to routine transactions, to raise questions about unusual or questionable items, and to suggest solutions. (Terminal positions are excluded.)

Direction received. Work is reviewed closely to verify its general accuracy and coverage of unusual problems, to insure conformance with required procedures and special instructions, and to assure his professional growth. His progress is evaluated in terms of his ability to apply his professional knowledge to basic accounting problems in the day-to-day operations of an established accounting system.

Typical duties and responsibilities. Performs a variety of accounting tasks, e.g., prepares routine working papers, schedules, exhibits, and summaries indicating the extent of his examination, and presenting and supporting his findings and recommendations. Examines a variety of accounting documents to verify accuracy of computations and to ascertain that all transactions are properly supported, are in accordance with pertinent policies and procedures, and are classified and recorded according to acceptable accounting standards.

Responsibility for direction of others. Usually none, although he may supervise a few clerks.

Buyer II

Purchases "off-the-shelf" types of standard, generally available technical items, materials, and services.

Transactions usually involve dealing directly with manufacturers, distributors, jobbers, etc.

Quantities of items and materials purchased may be relatively large, particularly in the case of contracts for continuing supply over a period of time.

May be responsible for locating or promoting possible new sources of supply. Usually is expected to keep abreast of market trends, changes in business practices in the assigned markets, new or altered types of materials entering the market, etc.

Examples of items purchased include industrial types of hand tools; electronic tube and component test instruments; standard electronic parts and components; electric motors; gasoline service station equipment; PBX or other specialized telephone services; and routine purchases of common raw materials such as standard grades and sizes of steel bars, rods, and angles.

Also included at this level are buyers of materials of the types described for Buyer I ("off-the shelf" types of readily available, commonly used materials, supplies, tools, furniture, services, etc.) when the quantities purchased exceed local sources of supply and the buyer must deal directly with manufacturers on a broader than local scale.

Computer Programmer, Business (Class B)

Works independently or under only general direction on relatively simple programs, or on sample segments of complex programs. Programs (or segments) usually process information to produce data in two or three varied sequences or formats. Reports and listings are produced by refining, adapting, arraying, or making minor additions to or deletions from input data which are readily available. While numerous records may be processed, the data have been refined in prior actions so that the accuracy and sequencing of data can be tested by using a few routine checks. Typically, the program deals with routine recordkeeping type operations.

OR

Works on complex programs (as described for class A--such actions as development of common operations which can be reused, establishment of linkage points between operations, adjustments to data when program requirements exceed computer storage capacity, and substantial manipulation and resequencing of data elements to form a highly integrated program) under close direction of a higher level programmer or supervisor. May assist higher level programmer by independently performing less difficult tasks assigned, and performing more difficult tasks under fairly close direction.

May guide or instruct lower level programmers.

Secretary I

Secretary to the supervisor or head of a small organizational unit (e.g., fewer than about 25 or 30 persons)

OR

Secretary to a nonsupervisory staff specialist, professional employee, administrative officer, or assistant, skilled technician or expert. (NOTE: Many companies assign stenographers, rather than secretaries as described above, to this level of supervisory or nonsupervisory workers.)

Janitor

Cleans and keeps in an orderly condition factory working areas and washrooms, or premises of an office, apartment house, or commercial or other establishment. Duties involve a combination of the following: sweeping, mopping or scrubbing and polishing floors; removing ships, trash, and other refuse; dusting equipment, furniture, or fixtures; polishing metal fixtures or trimmings; providing supplies and minor maintenance services; and cleaning lavatories, showers, and restrooms. Workers who specialize in window washing are excluded.

Carpenter, Maintenance

Performs the carpentry duties necessary to construct and maintain in good repair building woodwork and equipment such as bins, cribs, counters, benches, partitions, doors, floors, stairs, casings, and trim made of wood in an establishment. Work involves most of the following: planning and laying out of work from blueprints, drawings, models, or verbal instructions using a variety of carpenter's handtools, portable power tools, and standard measuring instruments; making standard shop computations relating to dimensions of work; and selecting materials necessary for the work. In general, the work of the maintenance carpenter requires rounded training and experience usually acquired through a formal apprenticeship or equivalent training and experience.

TABLE IV-3

AVERAGE MONTHLY SALARIES FOR SELECTED OCCUPATIONS AND INSTITUTIONS, 1970-71 to 1975-76

Occupational Category and Year	Indiana Postsecondary Institutions	Indiana State Government	U.S. Private Sector	Federal Civil Service
Secretary				
1970-71	458	440	555	569
1971-72	463	462	581	600
1972-73	495	462	612	631
1973-74	514	550	633	660
1974-75	550	594	680	696
1975-76	593	646	741	731
Janitor				
1970-71	417	380	475	537
1971-72	437	401	506	567
1972-73	466	401	530	622
1973-74	485	462	562	676
1974-75	501	517	603	818
1975-76	536	540	662	891
Carpenter				
1970-71	617	575	804	745
1971-72	658	600	872	787
1972-73	693	600	938	863
1973-74	710	691	1004	910
1974-75	769	743	1085	1085
1975-76	854	810	1175	1172
Accountant				
1970-71	784	690	851	787
1971-72	832	722	888	830
1972-73	864	722	918	873
1973-74	897	821	962	914
1974-75	932	884	1065	964
1975-76	1005	971	1117	1013
Programmer				
1970-71	728	860	815	787
1971-72	804	901	854	830
1972-73	845	901	875	873
1973-74	906	982	940	914
1974-75	951	1055	986	964
1975-76	1097	1105	1057	1013
Buyer				
1970-71	884	630	865	787
1971-72	932	661	910	830
1972-73	971	661	965	873
1973-74	1004	752	1012	914
1974-75	1101	810	1111	964
1975-76	1167	884	1184	1013

TABLE IV-4

ANNUAL PERCENTAGE INCREASES IN MONTHLY SALARIES FOR SELECTED OCCUPATIONS AND INSTITUTIONS, 1971-72 to 1975-76

Occupational Category and Year	Indiana Postsecondary Institutions	Indiana State Government	U.S. Private Sector	Federal Civil Service
Secretary				
1971-72	1.1	5.0	4.7	5.4
1972-73	6.9	0.0	5.3	5.2
1973-74	3.8	19.0	3.4	4.6
1974-75	7.0	8.0	7.4	5.5
1975-76	7.8	8.8	9.0	5.0
Janitor				
1971-72	4.8	5.5	6.5	5.6
1972-73	6.6	0.0	4.7	9.7
1973-74	4.1	15.2	6.0	8.7
1974-75	3.3	11.9	7.3	21.0
1975-76	7.0	4.4	9.8	8.9
Carpenter				
1971-72	6.6	4.3	8.5	5.6
1972-73	5.3	0.0	7.6	9.7
1973-74	2.5	15.2	7.0	5.4
1974-75	8.3	7.5	8.1	19.2
1975-76	11.1	9.0	8.3	8.0
Accountant				
1971-72	6.1	4.6	4.3	5.5
1972-73	3.8	0.0	3.4	5.2
1973-74	3.8	13.7	4.8	4.7
1974-75	3.9	7.7	10.7	5.5
1975-76	7.8	9.8	4.9	5.1
Programmer				
1971-72	10.4	4.8	4.8	5.5
1972-73	5.1	0.0	2.5	5.2
1973-74	7.2	9.0	7.4	4.7
1974-75	5.0	7.7	4.9	5.5
1975-76	15.4	4.7	7.2	5.1
Buyer				
1971-72	5.4	4.9	5.2	5.5
1972-73	4.2	0.0	6.0	5.2
1973-74	3.4	13.8	4.9	4.7
1974-75	9.7	7.7	9.8	5.5
1975-76	6.0	9.1	6.6	5.1

TABLE IV-5

INDEXES OF AVERAGE MONTHLY SALARIES FOR SELECTED OCCUPATIONS AND INSTITUTIONS, 1970-71 to 1975-76
(Indiana State Government = 100)

Occupational Category and Year	Indiana Postsecondary Institutions	Indiana State Government	U.S. Private Sector	Federal Civil Service
Secretary				
1970-71	104.1	100.0	126.1	129.3
1971-72	100.2	100.0	125.8	129.9
1972-73	107.1	100.0	132.5	136.6
1973-74	93.5	100.0	115.1	120.0
1974-75	92.6	100.0	114.5	117.2
1975-76	91.8	100.0	114.7	113.2
Janitor				
1970-71	109.7	100.0	125.0	141.3
1971-72	109.0	100.0	126.2	141.4
1972-73	116.2	100.0	132.2	155.1
1973-74	105.0	100.0	121.6	146.3
1974-75	96.9	100.0	116.6	158.2
1975-76	99.3	100.0	122.6	165.0
Carpenter				
1970-71	107.3	100.0	139.8	129.6
1971-72	109.7	100.0	145.3	131.2
1972-73	115.5	100.0	156.3	143.8
1973-74	102.7	100.0	145.3	131.7
1974-75	103.4	100.0	146.0	146.0
1975-76	105.4	100.0	145.1	144.7
Accountant				
1970-71	113.6	100.0	123.3	114.1
1971-72	115.2	100.0	123.0	115.0
1972-73	119.7	100.0	127.1	120.9
1973-74	109.3	100.0	117.2	111.3
1974-75	105.9	100.0	113.2	109.0
1975-76	103.5	100.0	115.0	104.3
Programmer				
1970-71	84.7	100.0	94.9	91.5
1971-72	89.2	100.0	94.8	92.1
1972-73	93.8	100.0	97.1	96.9
1973-74	92.3	100.0	97.2	93.1
1974-75	90.1	100.0	95.5	91.4
1975-76	99.3	100.0	95.7	91.7
Buyer				
1970-71	140.3	100.0	137.3	124.9
1971-72	141.0	100.0	137.7	125.6
1972-73	146.9	100.0	146.0	132.1
1973-74	133.5	100.0	134.6	121.5
1974-75	135.9	100.0	137.2	119.0
1975-76	132.0	100.0	133.9	114.6

APPENDIX C
TABLE IV-6

Number of Positions (1975), Average Monthly Salaries, and Percentage Growth by Occupational Category, All Higher Educational Institutions, Nov. 1972 to Nov. 1975

ALL HIGHER EDUCATIONAL INSTITUTIONS

	Occupational Categories	Positions 1975	Monthly Salaries Nov. 1972	Monthly Salaries Nov. 1975	Percentage Change 72-75	Compound rate of growth
1	SECURITY	21	557.14	656.88	17.90	5.64
2	BUILDING CUSTODIAN I	1319	439.96	534.27	21.42	6.68
3	BUILDING CUSTODIAN II	70	427.17	616.25	44.27	12.99
4	COOK	33	503.55	642.33	27.56	8.45
5	HOUSEKEEPER	0	0.00	0.00	0.00	0.00
6	INSTITUTIONAL WORKER	0	0.00	0.00	0.00	0.00
7	MAINTENANCE CARPENTER	62	680.00	828.92	21.90	6.82
8	MAINTENANCE ELECTRICIAN	54	698.13	835.78	19.72	6.18
9	MAINTENANCE PAINTER	38	650.73	798.59	22.72	7.06
10	MAINTENANCE PLUMBER FOREMAN	5	827.23	960.80	16.15	5.12
11	MAINTENANCE REPAIRMAN II	56	575.11	806.26	40.19	11.92
12	SEWAGE DISPOSAL PLANT OPERATOR	0	0.00	0.00	0.00	0.00
13	STEAM PLANT FIRE TENDER	14	563.95	639.36	13.37	4.27
14	POWERHOUSE FIREMAN	38	560.16	735.22	31.25	9.49
15	AUTOMOTIVE MECHANIC	21	622.30	764.25	22.81	7.09
16	ACCOUNT CLERK II	138	427.87	581.70	35.95	10.78
17	CLERK II	333	380.86	470.17	23.45	7.27
18	CLERK IV	161	467.33	558.99	19.61	6.15
19	CLERK STENOGRAPHER II	455	464.65	587.48	26.43	8.13
20	CLERK TYPIST II	277	397.43	535.80	34.82	10.47
21	CLERK TYPIST III	458	488.47	599.85	22.80	7.09
22	COMPUTER OPERATOR I	23	509.56	712.18	39.76	11.81
23	SECRETARY I	802	506.56	613.06	21.02	6.57
24	STORES CLERK II	44	552.33	689.37	24.81	7.67
25	KEYPUNCH OPERATOR	68	419.27	527.51	25.82	7.96
26	SWITCHBOARD OPERATOR II	27	399.99	497.14	24.29	7.52
27	DUPLICATING MACHINE OPERATOR	22	459.03	577.42	25.79	7.95
28	ACCOUNTANT I	26	458.98	972.61	111.91	28.44
29	ACCOUNTANT V	6	685.61	1346.54	96.40	25.23
30	ADMINISTRATIVE ANALYST II	5	1163.65	1375.95	18.24	5.75
31	CIVIL RIGHTS SPECIALIST II	1	850.00	942.00	10.82	3.48
32	GENERAL PHYSICIAN	16	1994.63	2316.92	16.16	5.12
33	LIBRARIAN II	26	900.17	1018.37	13.13	4.20
34	PERSONNEL OFFICER III	6	848.06	1001.11	18.05	5.69
35	PROGRAMMER II	22	786.24	1039.61	32.23	9.76
36	STAFF NURSE	46	681.07	816.46	19.88	6.23
37	STATISTICIAN II	0	0.00	0.00	0.00	0.00
38	STATISTICIAN IV	0	0.00	0.00	0.00	0.00
39	SYSTEM ANALYST II	24	875.43	1196.49	36.67	10.98
40	BUSINESS ADMINISTRATOR	8	1025.21	1528.94	49.13	14.25
41	DIETICIAN IV	15	1035.59	1272.51	22.88	7.11
42	ALL LABOR, TRADES, ETC.	1710	473.69	584.05	23.30	7.23
43	ALL CLERICAL, ETC.	2708	457.53	572.84	25.20	7.78
44	ALL PROFESIONAL, ETC.	201	878.08	1150.29	31.00	9.42
45	ALL OCCUPATIONS	4440	482.15	602.37	24.93	7.70

APPENDIX C
TABLE IV-7

Number of Positions (1975), Average Monthly Salaries, and Percentage Growth by Occupational Category, Indiana State Government, Nov. 1972 to Nov. 1975

INDIANA STATE GOVERNMENT

			Monthly Salaries			
	Occupational Categories	Positions 1975	Nov. 1972		Percentage Change 72-75	Compound rate of growth
1	SECURITY	128	496.17	626.17	26.20	8.07
2	BUILDING CUSTODIAN I	319	450.67	567.67	25.96	8.00
3	BUILDING CUSTODIAN II	25	474.50	593.67	25.11	7.75
4	COOK	163	541.67	710.67	31.20	9.47
5	HOUSEKEEPER	2	520.00	678.17	30.42	9.26
6	INSTITUTIONAL WORKER	1712	474.50	593.67	25.11	7.75
7	MAINTENANCE CARPENTER	50	621.83	810.33	30.31	9.23
8	MAINTENANCE ELECTRICIAN	45	621.83	810.33	30.31	9.23
9	MAINTENANCE PAINTER	50	593.67	775.67	30.66	9.32
10	MAINTENANCE PLUMBER FOREMAN	17	676.00	847.17	25.32	7.81
11	MAINTENANCE REPAIRMAN II	120	541.67	710.67	31.20	9.47
12	SEWAGE DISPOSAL PLANT OPERATOR	15	520.00	678.17	30.42	9.26
13	STEAM PLANT FIRE TENDER	113	541.67	710.67	31.20	9.47
14	POWERHOUSE FIREMAN	0	0.00	0.00	0.00	0.00
15	AUTOMOTIVE MECHANIC	73	630.50	775.67	23.02	7.15
16	ACCOUNT CLERK II	237	474.50	645.67	36.07	10.81
17	CLERK II	227	377.00	517.83	37.36	11.16
18	CLERK IV	360	474.50	645.67	36.07	10.81
19	CLERK STENOGRAPHER II	774	474.50	645.67	36.07	10.81
20	CLERK TYPIST II	930	377.00	517.83	37.36	11.16
21	CLERK TYPIST III	1137	431.17	593.67	37.69	11.25
22	COMPUTER OPERATOR I	15	621.83	775.67	24.74	7.65
23	SECRETARY I	416	520.00	710.67	36.67	10.97
24	STORES CLERK II	74	474.50	619.67	30.59	9.31
25	KEYPUNCH OPERATOR	148	474.50	619.67	30.59	9.31
26	SWITCHBOARD OPERATOR II	24	474.50	619.67	30.59	9.31
27	DUPLICATING MACHINE OPERATOR	17	431.17	567.67	31.66	9.60
28	ACCOUNTANT I	54	708.50	925.17	30.58	9.30
29	ACCOUNTANT V	17	1050.83	1356.33	29.07	8.88
30	ADMINISTRATIVE ANALYST II	19	775.67	970.67	25.14	7.76
31	CIVIL RIGHTS SPECIALIST II	9	812.50	1011.83	24.53	7.59
32	GENERAL PHYSICIAN	62	1911.00	2409.33	26.08	8.03
33	LIBRARIAN II	20	741.00	970.67	30.99	9.42
34	PERSONNEL OFFICER III	13	1096.33	1356.33	23.72	7.35
35	PROGRAMMER II	43	925.17	1152.67	24.59	7.60
36	STAFF NURSE	40	676.00	925.17	36.86	11.03
37	STATISTICIAN II	19	812.50	970.67	19.47	6.11
38	STATISTICIAN IV	1	966.33	1250.17	29.37	8.96
39	SYSTEM ANALYST II	32	1191.67	1464.67	22.91	7.12
40	BUSINESS ADMINISTRATOR	1	1347.67	1722.50	27.81	8.52
41	DIETICIAN IV	6	1050.83	1302.17	23.92	7.41
42	ALL LABOR, TRADES, ETC.	2704	494.67	625.75	26.50	8.15
43	ALL CLERICAL, ETC.	4359	442.00	603.05	36.44	10.91
44	ALL PROFESIONAL, ETC.	336	1055.77	1338.27	26.76	8.22
45	ALL OCCUPATIONS	7527	489.24	644.42	31.72	9.62

CHAPTER V

OPERATING COSTS IN HIGHER EDUCATION

Indiana institutions of higher education experienced much the same relief from rising prices in 1975 and the first half of 1976 as the U.S. economy as a whole. The rate of inflation, as measured by the Indiana Higher Education Price Index (HEPI), fell from 15 percent in 1974 to 8.3 percent in 1975 and 4.6 percent through June of this year. A moderation in the rate of increase in the prices of fuel, utilities and the other "unavoidables" was a key factor in the reduction, just as the large increases in the prices of those items propelled the 1974 increase. There is little evidence, however, that the rate will continue to decline. The index appears to be hovering around its average growth rate over the last nine years of about six to seven percent annually.

Prices of the "unavoidables" continued to behave erratically, particularly the price of coal, which is the second most important single commodity in the index. Coal prices shot up rapidly in 1973 and 1974 due to the strong domestic economy and the effects of the OPEC oil embargo. The index is strongly affected by "spot" market prices, in this case, the price that large coal-burning utilities must pay for coal above the amounts for which they have long-term contracts. The expansion of coal production and the renewed availability of foreign oil have caused the index to return to its late-1973 level, below which it is unlikely to fall. A resumption in price increases is expected in the near future.

Among the other "unavoidables", fuel oil and natural gas prices continued to rise at double-digit rates, although the impact is much less severe, since the institutions use small and decreasing amounts of these fuels. Electricity, the most important commodity in the index, jumped by 20 percent in 1975, reflecting higher fuel costs, but has increased by less than four percent this year. Water and sewerage costs stayed close to their long-run growth rates of about nine percent and telephone costs continued to be the slowest growing item, rising by just over three percent. Following the general rate increase early this year, postal rates jumped by over 25 percent and only continued federal subsidies will prevent a second similar increase next year. In total, these items increased by five percent in 1975 and only 1.2 percent this year.

Figure 1 shows the behavior of the Indiana Higher Education price index with and without unavoidables (fuel, utilities, etc.). The gap between the two narrowed somewhat in the last year and one half as the index without unavoidables increased by 10.1 percent in 1975 and 6.4 percent through June of 1976. Both increases were greater than for the aggregate index that includes unavoidables.

The remaining components of the index, which represent expenditures on supplies and equipment are considerably less volatile and may provide a better estimate of the basic or underlying rate of inflation for higher education expenditures. Price increases in 1975 for these components ranged from 5.0 percent for nonscientific classroom equipment to 13.5 percent for library books and periodicals. Tables 1 and 2 show the levels and percentage changes in these and the other index components from 1967 through June 1976. The largest increases were registered by the indexes with high raw material and relatively low technological content. The indexes that are strongly affected by the prices of lumber, paper, and cotton fibers were the fastest growing.

The Indiana Higher Education Price Index is similar in concept to the Consumer Price Index, since it represents the cost of the hypothetical "basket" of goods and services purchased by Indiana state higher education institutions. This approach can be contrasted with another widely used price index, the Wholesale Price Index (WPI), which measures the prices of various commodities and products over the entire economy. Unlike the CPI, however, HEPI does not

FIGURE 1 INDIANA HIGHER EDUCATION PRICE INDEX

(ANNUAL AVERAGES, 1967 = 100)

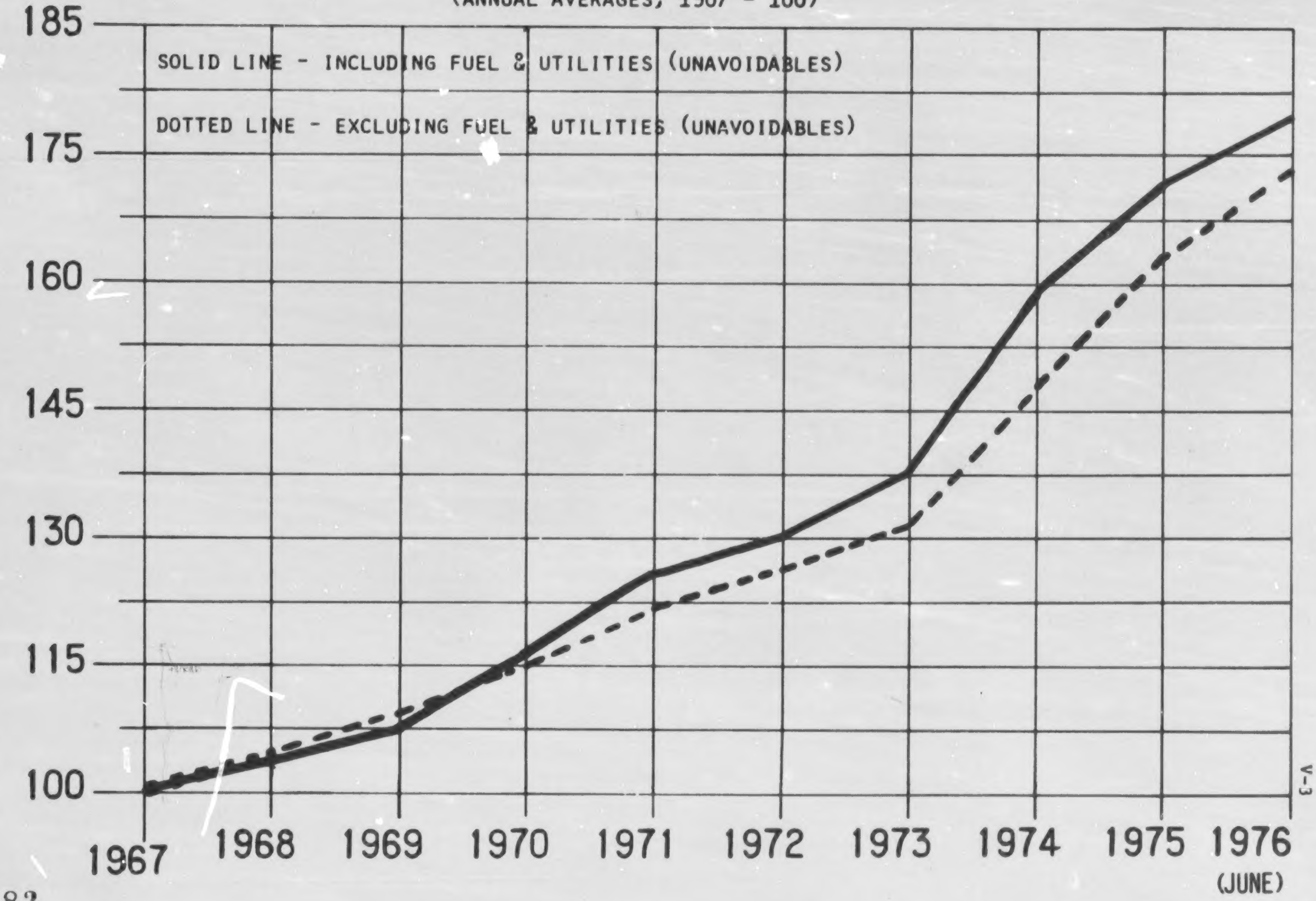

TABLE V-1 COMPONENTS OF INDIANA HIGHER EDUCATION PRICE INDEX, 1968-1976 (BASE PERIOD: 1967 = 100.0)

	1967	1968	1969	1970	1971	1972	1973	1974	1975(R)	1976(JUN)
EXPENDITURES SUBJECT TO PRICE ANALYSIS	100.0	103.1	107.3	116.2	125.1	130.3	137.4	158.5	171.6	179.5
UNAVOIDABLES--COAL	100.0	103.4	112.6	150.0	181.8	193.8	218.1	290.0	242.4	234.1
FUEL OIL	100.0	100.5	102.4	106.3	110.0	111.3	139.7	272.0	309.4	329.2
GAS	100.0	97.4	97.9	108.6	113.5	121.0	131.3	155.1	215.3	261.0
ELECTRICITY	100.0	100.8	102.0	104.8	111.5	118.8	123.4	143.0	171.7	177.5
WATER	100.0	101.3	103.6	120.4	133.4	138.5	146.1	154.8	169.9	186.8
SEWER	100.0	101.3	103.6	120.4	133.4	138.5	146.1	154.8	169.9	186.8
TELEPHONE	100.0	100.8	101.7	102.6	108.0	113.5	116.5	121.4	125.3	129.2
POSTAGE	100.0	104.4	109.0	117.7	138.1	146.6	146.6	170.5	175.4	219.7
TOTAL UNAVOIDABLES	100.0	101.6	105.1	118.3	132.5	140.5	150.4	182.5	191.6	193.9
CLASSROOM / EDUCATIONAL EQUIPMENT	100.0	101.3	103.0	105.5	107.2	108.9	114.5	131.7	143.3	148.2
SCIENCE AREAS	100.0	102.5	106.0	110.0	114.0	117.9	125.9	153.8	171.5	180.5
ALL OTHER AREAS	100.0	100.1	99.9	100.9	100.3	99.9	103.1	109.5	115.0	115.8
CLASSROOM / EDUCATIONAL SUPPLIES	100.0	103.4	107.2	112.1	116.7	118.8	122.6	140.4	157.2	166.1
SCIENCE AREAS	100.0	104.7	110.3	116.0	123.0	125.6	128.1	140.9	157.9	169.2
ALL OTHER AREAS	100.0	102.0	104.0	108.2	110.3	112.0	117.0	139.9	156.4	162.9
OFFICE EQUIPMENT	100.0	100.7	101.4	103.9	105.4	106.5	108.2	113.5	120.0	121.3
OFFICE FURNITURE AND FIXTURES	100.0	103.9	108.0	114.4	118.1	120.2	129.4	152.4	146.7	174.5
OFFICE SUPPLIES AND ACCESSORIES	100.0	101.2	102.9	106.8	108.6	109.8	115.1	139.8	156.9	163.1
LIBRARY BOOKS AND PERIODICALS	100.0	106.3	115.6	135.7	151.4	156.3	164.4	185.3	210.4	237.8
PRINTING AND PUBLISHING	100.0	105.5	110.4	116.5	121.9	127.4	132.6	152.9	162.5	171.7
MAINTENANCE AND REPAIRS	100.0	105.9	112.8	120.6	130.2	138.1	146.4	158.0	172.4	181.4
SPACE RENTAL	100.0	102.4	105.7	110.1	115.2	119.2	124.3	130.6	137.3	144.4
TRAVEL AND TRANSPORTATION	100.0	103.2	107.2	112.7	118.6	119.9	123.8	137.7	150.6	164.1
JANITORIAL SUPPLIES	100.0	102.0	104.2	108.9	111.4	115.4	124.1	154.3	181.0	200.6
NOT ELSEWHERE CLASSIFIED	100.0	102.5	106.0	110.0	114.0	117.9	125.9	153.8	171.5	181.8
EXPENDITURES LESS UNAVOIDABLES	100.0	103.7	108.3	115.3	121.8	125.7	131.6	147.7	162.7	173.0

(R) means revised with data that were not available for the 1975 report.

(Jun) means that the 1976 figure is for the month of June; if the change during the year is relatively steady, the June figure will be close to the average of the twelve months.

TABLE V-2 PERCENTAGE CHANGES IN COMPONENTS OF INDIANA HIGHER EDUCATION PRICE INDEX

	1968	1969	1970	1971	1972	1973	1974	1975(R)	1976(JUN)
EXPENDITURES SUBJECT TO PRICE ANALYSIS	3.1	4.1	8.4	7.6	4.1	5.5	15.3	8.3	4.6
UNAVOIDABLES--COAL	3.4	8.9	33.2	21.2	6.6	12.5	33.0	-9.5	-10.8
FUEL OIL	.5	1.9	3.8	3.5	1.2	25.5	94.7	13.7	6.4
GAS	-2.6	.5	10.9	4.5	6.6	8.5	18.1	38.8	21.2
ELECTRICITY	.8	1.2	2.7	6.4	6.5	3.9	15.9	20.1	3.4
WATER	1.3	2.3	16.2	10.8	3.8	5.5	6.0	9.8	9.9
SEWER	1.3	2.3	16.2	10.8	3.8	5.5	6.0	9.8	9.9
TELEPHONE	.8	.9	.9	5.3	5.1	2.6	4.2	3.2	3.1
POSTAGE	4.4	4.4	8.0	17.3	6.2	0.0	16.3	2.9	25.3
TOTAL UNAVOIDABLES	1.6	3.4	12.6	12.0	6.0	7.1	21.3	5.0	1.2
CLASSROOM / EDUCATIONAL EQUIPMENT	1.3	1.6	2.4	1.6	1.6	5.1	15.0	8.8	3.4
SCIENCE AREAS	2.5	3.4	3.8	3.6	3.4	6.8	22.2	11.5	5.2
ALL OTHER AREAS	.1	-.2	1.0	-.6	-.4	3.2	6.2	5.0	.7
CLASSROOM / EDUCATIONAL SUPPLIES	3.4	3.7	4.6	4.1	1.8	3.1	14.5	11.9	5.7
SCIENCE AREAS	4.7	5.3	5.2	6.0	2.1	2.0	10.0	12.1	7.2
ALL OTHER AREAS	2.0	2.0	4.0	1.9	1.5	4.5	19.6	11.8	4.2
OFFICE EQUIPMENT	.7	.7	2.5	1.4	1.0	1.6	4.9	5.7	1.1
OFFICE FURNITURE AND FIXTURES	3.0	3.9	5.9	3.2	1.8	7.7	17.8	9.4	4.7
OFFICE SUPPLIES AND ACCESSORIES	1.2	1.7	3.8	1.7	1.1	4.9	21.5	12.2	4.0
LIBRARY BOOKS AND PERIODICALS	6.3	8.7	17.4	11.6	3.2	5.2	12.7	13.5	13.0
PRINTING AND PUBLISHING	5.5	4.6	5.5	4.6	4.5	4.1	15.3	6.3	5.7
MAINTENANCE AND REPAIRS	5.9	6.5	6.9	8.0	6.1	6.0	7.9	9.1	5.2
SPACE RENTAL	2.4	3.2	4.2	4.6	3.5	4.3	5.1	5.1	5.2
TRAVEL AND TRANSPORTATION	3.2	3.9	5.1	5.2	1.1	3.3	11.2	9.4	5.0
JANITORIAL SUPPLIES	2.0	2.2	4.5	2.3	3.6	7.5	24.3	17.3	10.8
NOT ELSEWHERE CLASSIFIED	2.5	3.4	3.8	3.6	3.4	6.8	22.2	11.5	6.0
EXPENDITURES LESS UNAVOIDABLES	3.7	4.4	6.5	5.6	3.2	4.7	12.2	10.1	6.4

(R) means revised with dates that were not available for the 1975 report.
(Jun) means that the 1976 figure is for the month of June; if the change during the year is relatively steady, the June figure will be close to the average of the twelve months.

refer to an "average" consuming unit--a college or university--but only the aggregate expenditures of those institutions in the state of Indiana.

The three major steps in constructing the index were: 1) identifying categories of expenditures appropriate for price analysis; 2) locating appropriate price indexes for similar commodity groups; and 3) collecting expenditure data for each category from all institutions so as to derive the weights for the commodity price indexes.[1] Only General Fund operating expenditures were considered; many services and facilities such as student residence halls, athletic departments, and recreation and entertainment are not funded out of general revenues. General Fund expenditures such as personnel compensation, student financial assistance, and capital expenditures on physical facilities were also excluded from the HEPI analysis.

Expenditures subject to price analysis constitute about 20 percent of General Fund operating expenditures for the six state institutions. They were further divided into two broad sub-categories: fuel and utility expenses (unavoidables), with eight components, and the remaining expenditures on supplies and equipment, with 14 components. The percentage distribution of institutional expenditures among those categories was then used to weight the price indexes for each category. The index is computed as follows:

$$HEPI_j = \sum_{i=1}^{22} X_i \cdot P_{ij}$$

where $HEPI_j$ is the Higher Education Price Index for year j, X_i is the percentage weight for component index i during the base period, and P_{ij} is the price index for component i in year j. The sum of the weights, of course, is 1.0. Table 3 shows the expenditure components and their respective weights, expressed in percentages.

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[1] 1974 study, pp. 33-36 and pp. 79-81.

TABLE V-3

PERCENTAGE DISTRIBUTION OF EXPENDITURES SUBJECT TO PRICE ANALYSIS

	Percent
Expenditures Subject to Price Analysis	100.00
Coal	7.83
Fuel Oil	0.57
Gas	1.22
Electricity	11.63
Water	1.45
Sewer	1.28
Telephone	4.90
Postage	2.08
Classroom/Educational Equipment	7.88
Science Areas	3.95
All Other Areas	3.93
Classroom/Educational Supplies	8.64
Science Area	4.35
All Other Areas	4.29
Office Equipment	6.67
Office Furniture and Fixtures	0.66
Office Supplies and Accessories	6.66
Library Books and Periodicals	8.89
Printing and Publishing	3.45
Maintenance and Repairs	17.14
Space Rental	2.03
Travel and Transportation	4.43
Janitorial Supplies	1.29
Not Elsewhere Classified	1.31

The weights used for supply and equipment expenditures are based on the 1972-73 fiscal year operating expenditures of the six institutions. Within the 22 categories for which data were collected, the purchase records of Indiana University were examined closely to obtain an even more detailed description of the commodity composition of each category. As was discussed in the 1975 study,[2] we expect that these proportions will remain relatively stable. Due to their greater variability, the weights for the unavoidables are based on the average expenditures for the three fiscal years, 1972-1975, for the institutions. Expenditure data on the unavoidables was again collected for the 1975-76 fiscal year and found to be consistent with the three-year average. The only trend apparent in the distribution of expenditures is a slow shift away from fuel oil and natural gas to coal and electricity, which is small enough so as to have little effect on the overall index.

The primary sources of the prices indexes for the components of the HEPI are the detailed reports of the components of the Wholesale and Consumer Price Indexes, and earnings data for various occupations and industries. The original study in 1974 relied more heavily on industry and trade sources than the current one. By comparing indexes based on those sources with one based on similar WPI and CPI components a virtually identical trend is apparent. The WPI and CPI based indexes, however, have the distinct advantage of being available monthly at very low cost and behave less erratically due to a larger sample of commodity prices and more frequent sampling. Estimates of the Indiana HEPI's for the most recent periods can be derived without resorting to some ad hoc extrapolation of annual data, as was previously necessary.

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[2] See 1975 study, pp. V-8 to V-10.

It is helpful to compare price changes for specific industries or commodity groups with price indexes that measure price changes in broader groups of commodities for the entire economy. These broad indexes can be used to provide perspective for the specific commodity groups and also are of considerable importance in making price forecasts. The HEPI is a measure of the cost of producing certain types of educational services; hence, one should look for national indexes that measure production costs to compare with them. Three of the most widely available indexes are the implicit price deflator for Gross National Product (PGNP), the Wholesale Price Index for all commodities (WPI), and the Wholesale Price Index for industrial commodities only (WPIIND). In addition to these three indexes, the U.S. Department of Health, Education, and Welfare has recently published a national index for higher Education expenditures, which, unlike the Indiana HEPI, includes the cost of personnel compensation.[3]

The major difference in the composition of the Indiana HEPI and these four is that fuel and utilities costs (unavoidables) constitute a greater proportion of the total HEPI. It excludes, however, the cost of food, which has contributed significantly to the rapid rise in the WPI. When the unavoidables were excluded, we expected that HEPI would most closely follow the PGNP, which is the broadest of the four, and then the U. S. HEPI, and finally the WPIIND, whose components make up much of the Indiana index, albeit with much different weights. Tables 5 and 6 show the levels and percentage changes, respectively, of these indexes from 1967 to 1975.

In comparing the performance of price indexes the most important criterion is not how close their absolute values have been in the past, but how close their annual percentage changes have been. Index values or levels are seldom

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[3] Data for the 1976 U.S. HEPI are not yet available.

TABLE V-4

COMPARISON OF PRICE INDEXES, 1967-1976

	GNP PRICE DEFLATOR	WPI OVERALL	WPI INDUS COM	U.S. HEPI OVERALL	IND HEPI (SE ONLY)	IND HEPI (SE+UNAVD)
1967	100.0	100.0	100.0	100.0	100.0	100.0
1968	103.4	102.5	102.5	105.4	103.7	103.1
1969	108.5	106.5	106.0	111.9	108.3	107.3
1970	114.4	110.4	110.0	119.3	115.3	116.2
1971	120.2	113.9	114.0	128.7	121.8	125.1
1972	125.2	119.1	117.9	135.8	125.7	130.3
1973	132.5	134.7	125.9	142.8	131.6	137.4
1974	145.4	160.1	153.8	152.8	147.7	158.5
1975	158.2	174.9	171.5	166.0	162.7	171.5
1976(JUN)	166.3	182.1	181.8	NA	173.0	179.5

TABLE V-5

ANNUAL PERCENTAGE CHANGES OF PRICE INDEXES, 1968-1976

	GNP PRICE DEFLATOR	WPI OVERALL	WPI INDUS COM	U.S. HEPI OVERALL	IND HEPI (SE ONLY)	IND HEPI (SE+UNAVD)
1968	3.4	2.5	2.5	5.4	3.7	3.1
1969	5.0	3.9	3.4	6.2	4.4	4.1
1970	5.4	3.7	3.8	6.6	6.5	8.4
1971	5.0	3.2	3.6	7.9	5.6	7.6
1972	4.2	4.6	3.4	5.5	3.2	4.1
1973	5.9	13.1	6.8	5.2	4.7	5.5
1974	9.7	18.9	22.2	7.0	12.2	15.3
1975	8.8	9.2	11.5	8.6	10.1	8.3
1976(JUN)	5.1	4.1	6.0	NA	6.4	4.6

fully comparable, and planners are most concerned about forecast changes in absolute or relative prices, rather than how high or low the prices are. In comparing these indexes we used the root mean square difference or error (RMSE) in their percentage changes. This is defined as follows:

$$\text{RMSE} = \frac{1}{N} \left[\sum_{t=1}^{N} (F_t - A_t)^2 \right]^{1/2}$$

A is the actual percentage change in the Indiana index and F is the forecasted percentage change if one of the other indexes had been used for that purpose. N is the number of years over which the RMSE is computed.

This definition implies a quadratic loss function; when the absolute error doubles, the RMSE more than doubles, penalizing large errors. Table V-7 shows the computed RMSE's over the period 1967 to June 1976 for the Indiana HEPI's, with and without the unavoidables, and the other four indexes.

TABLE V-6

ROOT MEAN SQUARE ERRORS OF FORECASTING INDEXES
1967-1976

	PGNP	WPI	WPIIND	U.S. HEPI[4]
INDIANA HEPI WITH UNAVOIDABLES	1.23	3.91	3.64	2.20
INDIANA HEPI WITHPUT UNAVOIDABLES	2.30	3.55	3.32	3.19

For both Indiana indexes the broad-based implicit price deflator for GNP (PGNP) is the best estimator. Figure 2 compares the percent changes. On the average we would have been 1.23 and 2.30 percent off if we had forecasted the same increase for the Indiana indexes as for PGNP. This, of course, assumes that PGNP could have been forecasted perfectly, an assumption that is quickly discredited by economic forecasting experience. It does give validity to the approach in Chapter 6 of basing forecasts of the HEPI on expected events in the entire economy.

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[4] Based on 1967-1975 data.

Although the level of the WPI indexes and Indiana HEPI with unavoidables is almost the same for June 1976, their movements have been different. The second closest estimator of the Indiana indexes is the U.S. HEPI. Both these indexes follow the change in PGNP more closely than they follow the wholesale indexes. As expected, the Indiana indexes follow the WPI for industrial commodities (WPIIND) more closely than the WPI overall, although the differences are slight and the errors large.

INSURANCE EXPENDITURES

The six institutions in the 1975-76 fiscal year spent 6 3/4 million dollars, just under two percent of total general fund operating expenditures, on health, life and property insurance. These insurance expenditures were not included in the higher education price index. Life and health insurance are part of personnel compensation, and property insurance is and "S and E" item, although it was not included as a separate component in the S and E price index. Insurance costs are somewhat like the "unavoidables" included in the overall price index. Having once agreed to provide health insurance coverage as part of total compensation, the institutions can do little to control their annual premium expenditures.

The construction of a valid price index for insurance is more difficult than for the other items in the higher education price index. The cost of insurance premiums can be assigned to three sources: (1) changes in the costs of goods and services provided for by the policies; (2) changes in utilization rates--the proportion of insured who exercise their claim options and the types of services required; and (3) changes in the insurance companies' operating expenses and retained earnings. Even though the cost of physicians' services might be stable for a given period, insurance costs would rise if a greater proportion of the insured were to utilize those services or chose to utilize more expensive services. In an economic sense, the price of insurance would remain constant, and the beneficiaries might believe it was actually less, but the institution providing the coverage would have to pay more for insurance and would likely consider it a pure price increase.

Determining and obtaining appropriate price indexes for insurance premiums is also more complicated than in the case of other commodities. The national price indexes (CPI) for the cost of premiums or services refer to aggregate samples of urban wage earners and clerical workers. If the "typical" person insured by the institutions under group life and health policies have different utilization characteristics due to age differences, job safety differences, etc., their premium costs may not follow national movements of the CPI insurance component. Property insurance rates vary substantially with the type of risk assumed under the policy, which is dependent on geographic location and proximity to urban centers. Unlike the price of coal burned in steam generating plants, which we have argued should vary little over the state of Indiana, property insurance rates may vary substantially across the state.

Health insurance expenditures are the major insurance costs for the institutions. In 1975-76 health insurance premiums amounted to just over one percent of total general fund operating expenditures, and the cost of these policies has been rising rapidly due to premium increases and increases in the number of employees covered. The Bureau of Labor Statistics includes the cost of health (medical and disability) insurance in the U.S. Consumer Price Index. It has three main components: hospital services, non-hospital professional services, and health insurance overhead. The weights for the first two categories are determined by the mix of services required by people covered under the policies and the third is essentially a residual. The proportions of health insurance cost are 55.3 percent for hospital services, 33.7 percent for non-hospital professional services, and 11 percent for health insurance overhead. Over time the weight of hospital services has increased due to higher use relative to professional services which, as is shown below, have tended to push up insurance costs more than if the weights had remained stable.

Because of the problems involved in evaluating the health insurance overhead component, the Bureau of Labor Statistics does not publish or compute an index of the cost of health insurance. We can, however, obtain a good picture of how such an index would behave if it were available by examining changes in the other two component indexes (Table V-6). Since these indexes do not reflect changes in total utilization, which has been rising, health insurance premium costs from the viewpoint of the institutions have probably been increasing much faster. Due to a change in the coverage and definitions of the indexes in 1972, the hospital services series is discontinuous and not strictly comparable with previous years and we present only the annual percentage changes. The increases are well above those in the broader indexes discussed previously, one of which is the overall CPI which is shown in the last line of Table V-6. The indexes for medical care may, nevertheless,

TABLE V-7

Annual Percentage Changes in Medical Care Costs, 1968-1976

	1968	1969	1970	1971	1972	1973	1974	1975	1976(June)
Physicians' Services	6.0	7.0	7.0	7.0	3.1	3.3	9.2	12.3	10.4
Hospital Services	13.3	13.0	12.4	11.7	NA	3.5	9.0	14.9	11.1
Weighted Average	11.8	12.0	11.6	11.1	NA	3.8	10.0	15.4	11.9
Overall CPI	4.2	5.3	5.9	4.3	3.3	6.2	11.0	9.1	5.6

understate the escalation in premium costs paid by the institutions for reasons given above.

Life insurance costs are about half of health insurance costs for the institutions. We were not able to obtain comparative cost measures for life insurance premiums, but we are inclined to believe that the unit cost is relatively stable compared to health insurance. Utilization rates are obviously not such a difficult problem as for health insurance, and they should fall with increasing life expectancy. If we constructed a price index for life insurance following the same procedure used for health insurance, we would determine the real value of the benefits provided and the overhead component. Since benefits are paid in dollars rather than specific services, the appropriate price index would be a general one, such as the overall Consumer Price Index, to reflect the purchasing power of these dollars. The overhead, although difficult to determine, would be small relative to benefits, and the life insurance index would not be much different than the overall CPI.

Property insurance (fire, casualty, and liability) premiums are the smallest of the three types discussed here, amounting to just under four-tenths of one percent of total general fund operating expenditures. The Bureau of Labor Statistics does publish a Consumer Price Index component for property insurance (a part of the cost of home ownership), but it is difficult to determine the appropriateness of this index without knowing the aggregate risk characteristics of the CPI sample versus those of the institutions. There also may be some problems involved in correctly accounting for the institutions' property insurance expenditures. Some property may be insured out of the funds of auxilary enterprises and restricted accounts; also, differences in coverage may exist between owned and rented property. These factors complicate the task of determining the appropriate weight for total property insurance expenditures if they were to be included in the overall higher education price index.

The levels and annual percentage changes in the Consumer Price Index component for property insurance are presented below in Table V-7. The index measures the change in the cost of insuring a standard unit of property, and does not take into account the need to increase the amount of insurance as property values rise. A person living in a home whose replacement cost had doubled would presumably want to increase his property insurance by about the same proportion. From his point of view then, the cost of "property insurance" might be twice the level of the price index component for that period.

TABLE V-8

Property Insurance Component of the Consumer Price Index

	1967	1968	1969	1970	1971	1972	1973	1974	1975	1976(June)
Index Value	100.0	104.6	109.1	113.4	119.9	123.2	124.4	124.2	131.4	145.5
Percent Change		4.6	4.3	3.9	5.7	2.8	1.0	0	5.8	10.7

This discussion of insurance costs indicates the difficulties in developing a valid and reliable price index to include as a component of the higher education price index. It appears that the available national indexes for property insurance simply do not portray the situation of the educational institutions. The costs of life insurance and health insurance comprise part of the personnel costs for the institutions, so they would not be a part of the S and E index. Property insurance costs are certainly not insignificant to the institutions, but an insurance component, if included in the overall price index, would receive relatively low weighting. For a variety of reasons, we believe it is preferable at this time to omit insurance costs from the overall price index. We recommend, however, that insurance costs continue to receive separate treatment as they have in this report. Possibly a meaningful index can eventually be constructed for these costs.

CHAPTER V

Appendix A

PRICE INDEXES FOR COMPONENTS OF THE HIGHER EDUCATION NONPERSONNEL PRICE INDEX

The commodity composition of the 22 components of the Higher Education Price Index was determined by extensive examination of the general fund purchases of Indiana University during the 1972-73 academic year.[1] Thus, the procedure for constructing the index assumes that the expenditure patterns within the component categories at Indiana University are representative of those of other institutions. Variations from the I.U. pattern are probably not great for most categories. Since the 1974 study was completed, several commodity price indexes that relate more closely to higher education expenditures have become available and a smaller number have been discontinued or are not available at this time. Data for the component and overall indexes have been revised wherever possible to use these price indexes that better represent the commodity expenditures of the institutions. Most changes in the component indexes were small and the effect on the overall index was negligible.

Coal

In 1974 the U.S. Bureau of Labor Statistics initiated a Wholesale Price Index (WPI) component for coal purchased by steam-generating electric utilities. This is an appropriate index for the relatively high sulfur content, bituminous coal burned in the institutions' power plants. The index base, December 1973 = 100, was adjusted to 1967 = 100 by simple ratio. No estimates of this index are available prior to 1974 and the WPI component for all types of coal is used for those years.

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[1] See 1974 report, pp. 33-39, pp. 79-81.

Fuel Oil and Gas

The fuel oil index is the WPI component "refined petroleum products, middle distillate." The gas index is the WPI component for natural gas.

Electricity

The Wholesale Price Index for "commercial power, 40 kilowatt demand, east north central United States" is used for the index of electricity costs. The index base, December 1970 = 100, was adjusted to 1967 = 100 for 1971 thru 1975. Prior to 1970 the WPI component for all electrical power was used.

Water, Sewer, Telephone, and Postage

The CPI component for water and sewerage services is used for both the water and sewer indexes since separate detail is not available. The CPI components for telephone services and for postal services are used for the telephone and postage indexes.

Classroom Equipment--Science Areas

The rapid technological change in scientific equipment makes it inappropriate to construct an index using price quotations for specific items, since price changes due to quality changes are important and cannot be separated from purely inflationary increases. The Scientific Apparatus Makers Association has estimated a price index for laboratory and optical equipment, which closely followed the industrial commodities component of the Wholesale Price Index through 1973. Their index, however, is available only to members of the Association. The WPI component for industrial commodities was used for this category.

Classroom Equipment--Nonscience Areas

The nonscience classroom equipment index is composed of the WPI component indexes for five items which were found to be representative of I.U. purchases in this area: 1) electronic components; 2) closed circuit televisions; 3) portable reel tape recorders; 4) photographic equipment; and, 5) musical instruments. Each item was given equal weight in constructing the overall index for this category.

Classroom Supplies--Science

This index is made up of the WPI component indexes for four items that are representative of I.U. purchases in this area: 1) flat glass; 2) glass containers; 3) integrating and measuring instruments; and 4) portable dial scales. Each item was weighted equally.

This was the only index whose composition was changed since the 1975 study. Previously, the catalog prices of four items were used to construct it; one of these items is no longer available from the same supplier. The revised index differs only slightly from the original one, and is preferable since current data are more readily available.

Classroom Supplies--Nonscience

I.U. purchases in this category were very similar to the items included in the higher education indexes for office supplies and printing and publishing. The nonscience classroom supplies index has the following components with the indicated weights: 1) office supplies index - .80; 2) printing and publishing index - .10; and 3) the WPI component for photographic supplies - .10.

Office Equipment and Office Furniture

Purchases in these categories were similar to the sub-categories of the Wholesale Price Index components "office and store machines and equipment" in the case of office equipment and "commercial furniture" in the case of office furniture.

Office Supplies

Components of the office supplies' index were taken from the Wholesale Price Index and weighted according to I.U. Central Store purchases. The items and their weights are: 1) paper except newsprint - .507; 2) office supplies (file folders, cards, ribbons, etc.) - .412; and 3) pens and pencils - .078.

Library Books and Periodicals

I.U. Library purchases for 1972-73 were distributed as follows: 1) binding - .173; 2) periodicals - .327; 3) hardcover books - .475; 4) paperback books - .025. An index of binding costs was constructed using average hourly earnings of production workers in bookbinding and related industries (U.S. Bureau of Labor Statistics, Employment and Earnings), the WPI component for bookbinding machinery and equipment (to capture depreciation) and the WPI component for paper except newsprint, weighted .40, .20, and .40, respectively. Indexes of book and periodical prices were constructed using the R. R. Bowker Company, Bowker Annual. According to the 1967 Census of Manufacturers, wages of production workers were nearly 40 percent of value added in the bookbinding industry.

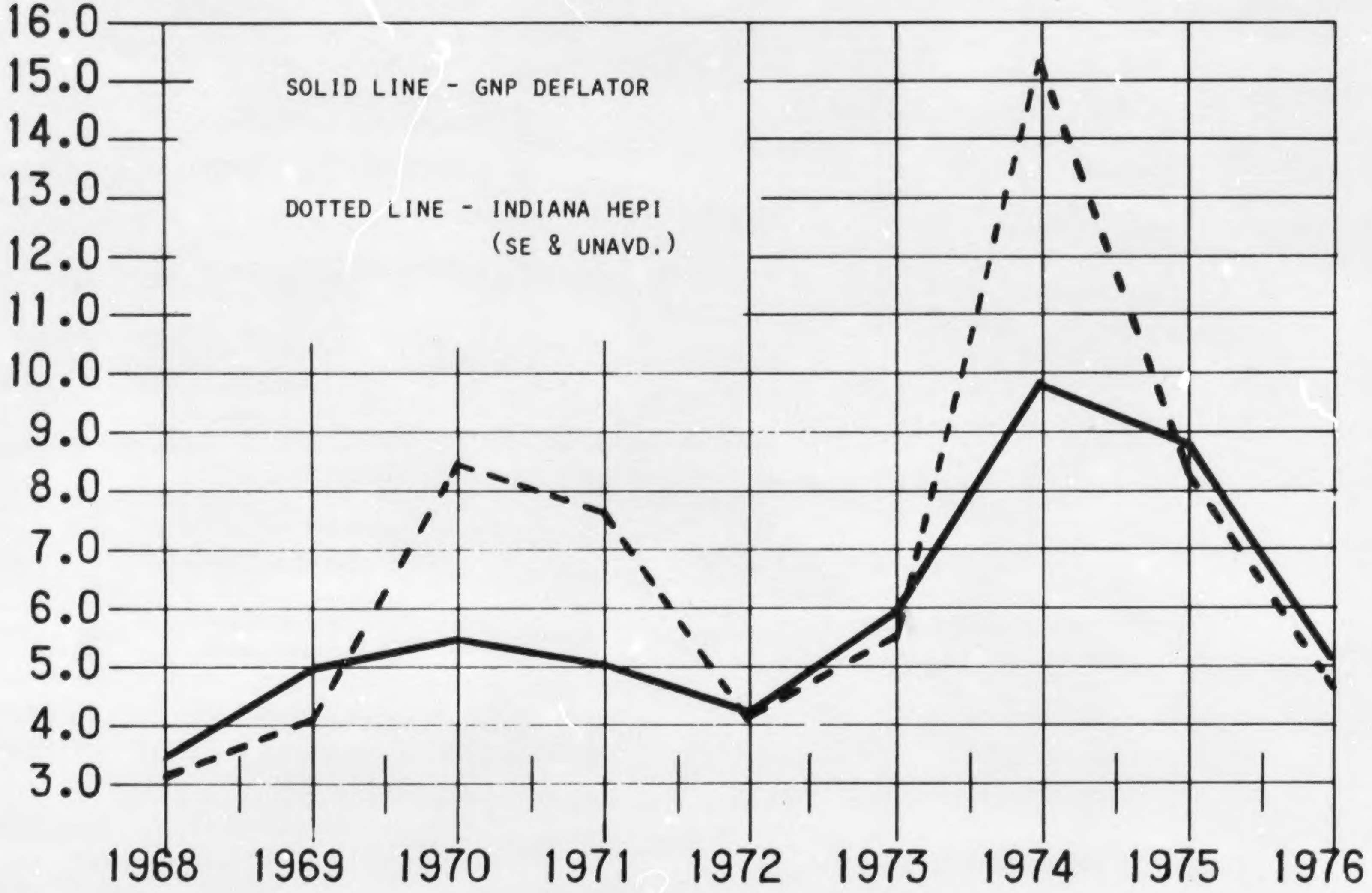
Printing and Publishing

The printing and publishing index has three components with the indicated weights: 1) average hourly earnings of production workers in the printing and publishing industry* - .40; 2) the WPI component for printing trades machinery and equipment - .20; and 3) the WPI component for book paper - No. 3 uncoated offset - .40.

Maintenance and Repairs

This category consists of two major components--maintenance and repairs of buildings and maintenance and repairs of equipment. At Indiana University,

FIGURE 2 PERCENTAGE CHANGES IN THE INDIANA HEPI AND THE GNP DEFLATOR 1968-1976[a]



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[a] THE FIGURE FOR 1976 IS THE JUNE FIGURE. THE AVERAGE FOR THE YEAR WILL BE DIFFERENT THOUGH IT IS FREQUENTLY CLOSE TO THE JUNE FIGURE.

these two components involve similar total expenditures. A price index was selected for each component, and each was given equal weight in constructing an aggregate index for the combined category. The maintenance-and-repairs-of-equipment component involves highly skilled technicians; consequently, the pay index for engineering technician III (U.S. Bureau of Labor Statistics, *National Survey of Professional, Administrative, Technical, and Clerical Pay*) was used as a proxy for the price index. The Boeckh Index for construction costs of industrial and commercial buildings (*Survey of Current Business*) was used for building maintenance and repairs.

Space Rental

Commercial office space is a highly regional market; unfortunately no regional indexes are available. The *Office Building Experience Exchange Report* (Building Owners and Managers Association International, 224 South Michigan Avenue, Chicago, Illinois 60604) contains data on operating costs per square foot for rental office space in various size cities. The 1974 study employed an index based on these data. However, the report must be purchased by nonmembers and the data are published with a long lag. A comparison of this index with the rent component of the Consumer Price Index showed the two move very closely and the previous index was replaced with the CPI component.

Travel and Transportation

The travel and transportation index includes the cost of both public and private transportation and uses that component of the Consumer Price Index.

Janitorial Supplies

The janitorial supplies index was developed by examining the purchase records of the I.U. Central Stores. The weights of the items included are based on the actual distribution of those purchases and their indexes are taken from the Wholesale Price Index: 1) grey fabrics (rags, etc.) - .194; 2) Pushbrooms - .078; 3) soaps and synthetic detergents - .157; 4) petroleum wax - .092; 5) toilet tissue - .234; and 6) paper towels - .245.

Not Otherwise Classified

For this very small category the industrial commodities component of the Wholesale Price Index was used.

Chapter VI

INFLATION

A year ago, we forecasted (subject to the necessary caveats about forecasting anything as subject to unpredictable events and public policy decisions as the price level) that the inflation rate over the next three fiscal years would average 8 to 10 per cent. We added that the inflation rate "may well stay below our forecasted range during the early stages of the recovery from the recession," but that it is "highly improbable that a drop of more than 2 or 3 percentage points below the forecasted lower limit can be sustained for more than a very brief interval."

Actual experience has been better than we hoped for. The Consumer Price Index increased by only 5.6 per cent from August 1975 to August 1976, and this relatively low rate--"low" relative to recent years--was fairly well sustained during the year. The low point of the inflation rate was in the first quarter of this year, when food prices actually declined as did gasoline prices. Since then, the rate of inflation has drifted upward to a 6.0 per cent seasonally adjusted annual rate in August with food prices, though rising, still by less than the average of all items, and service prices above the average--7.2 per cent annual rate in August.

This relatively favorable experience can be attributed partly to unpredictable and non-repetitive events, but it does require a basic reevaluation of the premises on which our forecast was based.

As we said last year, it is necessary to make a distinction between the long-run, underlying trends that determine the inflation rate, and those of a more temporary, short-run nature. This definitional distinction is sometimes difficult to make, especially until after a considerable passage of time, but it is useful for analytical purposes nonetheless.

Inflation as a Long-Run Phenomenon

Federal Reserve Board Chairman Arthur Burns recently said, in testimony before the Joint Economic Committee of the Congress, that the "underlying inflation rate" in the United States is 6 to 7 per cent. The actual inflation rate in any given time interval will be above or below this range depending on short-run economic and technological events, international events, "Acts of God" (e.g. the weather), and the character of public policy as it affects the inflation rate. We concur in Chairman Burns' assessment, recognizing at the same time that the underlying inflation has gradually changed in the past and may do so in the future.

Although inflation is an age-old phenomenon, the current underlying inflation is quite different from what it was only a few decades ago. It has a different basic character. In the more distant past, periods of inflation have been interrupted with intervals of deflation, or of essentially stable prices, so that the overall long-run trend was only moderately upward. From 1860 to 1939, for example, a period that included two periods of deflation, the Consumer Price Index (CPI) showed a net increase of only 54 per cent. Then, from 1939 to 1972 (before the explosion that began in 1973) the same index tripled. Or, starting from a post-World War II year, the CPI doubled between 1946 and 1972. During these latter intervals, the index rose in every year save two: 1949 and 1955 when, thanks to fortuitous circumstances, it declined by a fraction of one per cent.

The evidence is clear that the United States economy (and, for that matter, every other country in the Western World), currently has a strong, built-in inflationary bias. Further, there has been a tendency for the magnitude of this inflationary bias to grow over time.

In analyzing the causes of this inflationary bias, economists sometimes tend to generalize--to aggregate--too much. We talk in terms of the price level, of the total money supply (somehow defined), of total GNP. We tend to forget that the price level is nothing more than an average of thousands, indeed millions, of individual prices. And each of these prices is directly determined, not by some abstract aggregate, but by people: workers, employers, union negotiators, farmers, company executives and salesmen, traders on commodity exchanges, public utility commissioners, doctors, lawyers, university administrators, etc. Only by analyzing the motivations and behavior of these people, and the constraints upon their behavior, can we identify the causes of the underlying inflation rate.

There are two sides to every counter; when an individual price goes up, someone pays more, but someone else receives more. That is, prices determine, not only how much money we have to pay, but also money income. Further, incomes--wages, salaries, etc.--are a cost of production. Increases in wages and salaries must be recovered in increased selling prices, unless productivity increases proportionately, if employers are to stay in business. There has always been a tendency for people to be dissatisfied with their scale of living and to press for higher incomes, i.e., for higher prices for whatever they have to sell including their own services. But in the days when most individual prices were determined by an impersonal, competitive market, not subject to control or influence, people could not make their pressure effective if the market was unfavorable.

In recent decades, however, a number of basic changes have occurred to enhance the effectiveness of individual pressures for higher incomes,--for higher prices.

First, we have witnessed in the United States an increased politicization of the economic process. The event that is often cited as the symbol of this politicization is the enactment of the Employment Act of 1946, in which the Congress declared that the maintenance of a high level of employment, production, and purchasing power is a priority policy objective of the U.S. Government. Stable prices are not mentioned in the Act. Ever since then, whenever the federal government has been confronted with an uncomfortable choice in the trade-off between high employment and stable prices, the latter has been given second priority.

Second, we have seen a change in social attitudes and mores that constrained people in pressing for higher incomes. Joan Robinson, a British economist, attributed the contemporary inflationary bias to the "breakdown of the caste system". She was referring to Britain, but in substantial measure her diagnosis applies to the United States as well. We do not like to admit that we have or have had a caste system in the United States, but in all honesty we must admit that we have had one. A caste system in an informal, silent, but if it is accepted as inevitable, effective compulsion on people to accept their station in life, to refrain from demanding the higher incomes that they would like to have. What has happened to the caste system in the United States in the past several decades?

Farmers are demanding government price supports, acreage allotments, and other means of raising their incomes.

Manual laborers--carpenters, plumbers, assembly-line workers, garbage collectors--long reconciled to an inferior economic status, are demanding higher incomes.

Immigrants, once numerous and forced to accept low wages, have been replaced by second and third generations who feel they are the equal of all other Americans.

Blacks, long discriminated against in employment and incomes, are demanding equality with whites.

Women, long second class citizens, are demanding equality--political, social, and economic--with men.

School teachers, nurses, and others in social service occupations, who were supposed to live quietly and be content with modest incomes are organizing to improve their economic status.

No longer constrained by a caste system, nearly everybody is pressing to improve his relative economic position. It is obvious that everyone cannot improve his relative economic position at the same time. When nearly everyone tries to do so, the inevitable result is a general, massive pressure to raise wages and salaries--to generate inflation.

A further aspect of the same phenomenon relates to the sequential, cause-effect relationship between this year's inflation and next year's. Inflation breeds further inflation. When for any reason an inflationary process gets started and persists for a significant time period, workers, both organized and unorganized, demand higher wages to compensate for the rise in the cost of living--the loss of real income due to past inflation. In many instances, automatic escalator clauses are built into labor contracts. Thus wages are pushed up, and these increased wage costs are passed along in further increases in end-product prices and therefore in the cost of living. And so on around and around the vicious circle. Indeed, both sides of the bargaining table attempt, often successfully, to do more than simply recapture past losses in real income. When they do attempt to get ahead of the game, unless productivity gains are substantial, the second round of inflation is bigger than the first, and the third is bigger than the second, and so on.

A third event that has led to chronic inflation, which we have already mentioned in passing in the paragraphs above, is a structural change in the American economy, from one which was highly individualistic, dominated by small sellers, to one which is dominated by large, well-organized power groups. These power groups have taken many forms.

Producing companies--sellers of goods and services--have grown in size or merged with other companies to make giant corporations which can exercise a substantial degree of control over the prices of the products they sell. They can pass along cost increases without much difficulty, especially when their few competitors are faced with the same cost increases.

Workers have organized into unions which, through the right to strike, substitute much more effective collective wage bargaining for individual bargaining.

Trade associations, even when careful to avoid collision with the antitrust laws, nevertheless exercise a measure of control over the economic behavior of their members. This is especially true in the case of the professional trade associations, such as those in medicine, law, and the like.

Others use political rather than economic pressure. That is, they organize lobbies to obtain special treatment from government to protect or enhance their economic position.

The significance of all of these pressure groups, whatever their form, is that they lend force to the individual desire for higher incomes that were formerly so ineffectual. It is true that each of us is both a producer and a consumer. As consumers, we do not want prices--other people's prices--to go up. We could organize consumer power groups.

But people have always been more vigorous and vocal in their producer roles than in their consumer roles. Occasionally consumer groups organize into effective power groups, but they seldom last long. The net effect is that the producer power groups normally dominate, and give effect to pressures for higher incomes. A chronic inflationary tendency is the result.

Short run circumstances frequently complicate the inflationary tendency, in either direction. We will discuss some of the more important of these presently. And public policy, chiefly monetary and fiscal policies, can dampen or aggravate this chronic inflationary tendency. These will also be discussed later. The point to be made here is simply that these shorter-run events are in addition to a chronic inflation that probably would have occurred without these events. Moreover--to anticipate one of our conclusions--in the real, political world in which we live, they are more likely, most of the time, to add to rather than to subtract from the underlying inflation rate.

Short Run Considerations

The Recent Record. After six consecutive quarters of expansion, The U.S. economy is continuing its resurgence from the worst recession since the 1930's. Led by consumer spending and inventory building, the expansion gained momentum in the first half of 1976, with more modest expansion so far in the third quarter. Business fixed investment, which had shown virtually no real growth, is finally showing signs of a takeoff. New orders in the capital goods sector (excluding defense spending) rose by $1.7 billion to $13.5 billion in July, which is suggestive of a major advance in capital spending, particularly in non-electrical machinery, aircraft and shipbuilding. Another positive sign of the continued recovery is a continuing buildup of unfilled orders for durables, as new orders have exceeded shipments of durable goods. Retail sales, especially in soft goods, have shown some signs of weakness in recent weeks, but disposable personal income has been rising steadily; a resumption of gradually rising consumer spending is therefore to be expected. Inventory/sales ratios are low by historical standards so that inventory accumulation should accompany rising consumer spending for goods. Meanwhile, spending for services will continue their steady rise, for inflation reasons if for no other. (The recent softness in soft goods sales has been attributed in part to the steady rise in service prices, notably utility bills and medical costs.) We are thus witnessing the classic pattern of increased consumer spending, followed by inventory accumulation, which in turn leads to a revival of capital spending as the recovery progresses. In short, the economy shows every sign of continuing its expansion throughout the coming year, though at a slower pace than the early months of the year which reflected unusual inventory build-ups.

What is the near term outlook for inflation? If viewed by historical standards the outlook is not optimistic. If the post-war pattern of economic recovery gives any clue to the inflationary nature of the current recovery, then we should expect significantly higher prices in the coming year. Normally, in the first year or so of recovery from a recession, productivity gains permit a substantial increase in output without inflationary pressures. If one examines the rate of inflation following the '54 recession, the '58 recession and the '60 recession, the consumer price level was rising at about 1% per year after one year of recovery. A year after the '69-'70 recession, prices were going up only about 3.3%. However, consumer prices are currently rising about 6%. Although this is certainly much lower than the double-digit rates of 1973-74, it is still high by historical standards.

This is only part of the story. The moderate rate of inflation that was in evidence early this year was largely due to flat and falling food prices (chiefly meats), which make up almost 25% of the consumer price index. The service sector continues to show price increases much greater than the overall economy's price rise. Prices for gasoline, clothing, houses and furniture are continuing to rise. Used car prices are up sharply. In summary, the inflationary base for the current recovery is about twice that of the '70 recession and nearly six times as high as those of the earlier postwar recessions. In addition, the recent fortuitous price depressing effects in the food and petroleum sectors will no longer act as a restraint to curb the overall rate of inflation.

There is some evidence that cost-push inflation will become a major element in the near future. For example, the United Rubber Workers union recently reached a proposed settlement, ending its four month old strike with the industry. The settlements call for a wage and benefits package that will give rubber workers a 36% to 40% increase over the coming three years. These benefits will be passed on to consumers and to automobile producers in the form of higher tire prices. It is yet too early to anticipate the nature of the expected settlement between the United Auto Workers and the Ford Motor Company, but the "Big Three" automobile producers have hinted that car prices would rise about 4.9% for the new, reduced-size models and about 6% on average for all models. Certain steel companies announced and then postponed price increases for flat rolled and bar products, both used in automobile production. If these price increases should be reinstated, auto producers may reexamine their 1977 pricing policies.

Recent evidence indicates that bottleneck inflation may reappear next year in much the same form that it took in 1973. Even though plant and equipment spending has started to increase recently, the gestation period for capital spending may be too long to avoid bottlenecks that result from insufficient capacity in the major producing sectors.

For example, a year ago the electric utility companies in the U.S. breathed a sigh of relief. Higher utility prices and a mild winter slackened the growth of demand for electrical power, and it appeared that utilities were able to supply anticipated future needs of energy users. However, it is becoming increasingly apparent that the electrical utility industry will soon be affected by supply pressures. Electrical consumption in the U.S. remained flat in 1974, and grew only about 2% in 1975. However, total consumption of electricity grew at a rate of 5.2% in the first eight months of 1976, and this rate is now escalating. Of course, some rapid growth areas are going to be affected more than others, but the economy may soon be faced with the full capacity and bottleneck problems that led to double-digit inflation in 1973.

Economists may have been somewhat complacent with regard to the inflationary aspects of manufacturing capacity, partly because they have been looking at an index of questionable validity. The Federal Reserve Board's index of manufacturing capacity has run between 78% and 82% this year, which would appear to indicate sufficient excess capacity to avoid any bottleneck problems. However, independent studies have indicated that this index has a serious downward bias, and that U.S. manufacturing firms are now operating fairly close to their desired levels, normally about 90% of capacity. Further, some industries, notably basic materials, are already at about 90% of capacity even in the published F.R.B. index.

Interest Rate Patterns. Both short-term and long-term interest rates have so far remained at levels lower than most forecasters were predicting for this stage of the current recovery. It is generally conceded that long term interest rates fluctuate directly with the expected level of inflation, and that these inflationary expectations are largely determined by current and recent past rates of inflation. Historically, real rates of interest on long-term assets have generally been about 2½%. If this historical yardstick is applied to current interest rates, a 6% inflation with a 2½% real return adds up to a long-term money rate of interest of about 8½%. However, if the rate of inflation accelerates next year, long term rates should move up along with the higher inflation rate. Short-term interest rates have been quite a bit lower than expected, partly due to lower anticipated rates of inflation, and partly due to an easing monetary posture on the part of the monetary authorities. However, a good part of the explanation lies in the increased magnitude of foreign investments in the U.S. The New York based Conference Board has stated that direct foreign investments in the U.S. in the first half of 1976 were about 60% higher than they were in the first half of 1975. Department of Commerce figures indicate capital inflows into the U.S. of about $7 billion in the second quarter, up from $4.75 billion in the first quarter. These figures exclude flows from direct investment, but support the view that money and capital flows from overseas are helping keep interest rates down. This influx of foreign funds has helped to keep both money market and capital market rates of interest lower than they would have been as the result of only domestic influences.

The Possibility of Future Inflationary Shocks to the Economy. Upon examination of the double-digit inflation accompanying the 1973-75 recession, there were several lessons to be learned. Most economists agree that the economy was operating too close to plant and equipment capacity for the 1973 boom to be sustained. However, it is clear that "external shocks" to the economy were also responsible for the surge of inflationary pressure at that time. The Russian Wheat Deal of early 1973 that led to a food price explosion, the oil embargo of late 1973 followed by the near-quadrupling of foreign oil prices early in 1974, and the ending of wage-price controls in 1974 are all considered important contributing factors to both the 1973-75 recession and its accompanying double-digit inflation.

It would be naive to expect that no such shocks will occur over the next year or two. For example, it is quite likely that natural gas will be deregulated at the inter-state level, with gas prices moving sharply upward on an aggregative basis. Plans to import liquified natural gas and to make gas from coal are still far from operational, and gas from these sources is sure to be very costly. In addition, the price and output decisions of the OPEC are much more likely to be inflationary than deflationary.

In summary, there are many forces that will lead to escalating prices over the near term. The Consumer Price Index has gone up only moderately so far this year, held down by the weaknesses in farm prices reflected at the supermarket level. However, the increases in industrial prices are starting to escalate. In addition, raw materials prices--usually considered a leading indicator of future price increases at the wholesale and consumer levels--have been rising much more rapidly than consumer prices so far this year. It is easy to get the impression that inflation is no longer an important economic problem. As viewed in the context of likely near-term developments, inflation will remain a serious problem over the near future.

The underlying long-run inflationary tendency, and to some extent even short-run, temporary influences can in some measure be constrained by public policy, notably monetary and fiscal policy. These public policy actions are difficult to forecast, for obvious reasons. Nevertheless, some consideration should be given to their effectiveness and potentialities.

Inflation and the Money Supply

Economists differ among themselves as to the direction of the cause-effect relationship between the money supply, on the one hand, and money incomes and the price level on the other hand. Some (the so-called "monetarists") argue that autonomous increases in the money supply, in excess of that needed for normal long-run growth, are the initiating cause, and that the consequent increase in money incomes (and hence in demand) induces an increase in the average level of prices when the supply of goods and services does not expand simultaneously and proportionately. Clearly, there have been instances in U.S. history when the money supply was expanded in advance of any increase in the need (demand) for money, and inflation ensued.

Others argue that the causation is more typically in the opposite direction. Money incomes are pushed upward by negotiated or strike-induced increases in wages in excess of productivity increases, by business firms possessed of economic power autonomously raising prices to recoup these increased wage costs or simply to improve their profit positions, and by autonomous increases in other factor costs (e.g. oil, bauxite). Or the increase in incomes may be caused by an increase in government spending not accompanied by an equal increase in tax revenues. An upward pressure on money incomes and end-product prices inevitably ensues. This higher level of incomes and prices normally requires a larger supply of money, though not necessarily a proportionate one. For many years, the long-run trend in the velocity of money (GNP divided by the money supply) has been gradually rising, and in the past year or so velocity has risen sharply as it typically does in the early stages of a recovery. But unless rising velocity does compensate for the rise in current dollar GNP occasioned by autonomous increases in prices, plus perhaps a rise in real output, an increase in the money supply is necessary to sustain the higher dollar volume of business transactions.

The money supply is generated by the banking system, but is largely controlled, directly or indirectly, by the Federal Reserve System. The Federal Reserve can limit the expansion of the money supply to an amount less than that required by the rising level of current dollar GNP (caused in whole or in part by rising prices). If they do, some borrowers from banks will either be denied credit simply because loanable funds are not available, or they may be rationed out by interest rates they find unacceptably high. In either event, spending will be reduced below what it would otherwise be. That is, aggregate demand, in current dollar terms, is constrained, Either prices or the volume of production in real terms must come down. Given the downward rigidity of most wages and prices, the impact of restrictive Federal Reserve policy is likely to be felt primarily on the real level of business activity, and sooner or later on employment, rather than on prices.

Conversely, the Federal Reserve may pursue an "accommodative" monetary policy, permitting the money supply to rise as needed by the rising dollar volume of transactions. In this event, the higher prices are validated--there is no monetary pressure to reduce them. Most monetarists recognize that this sequence of events is common, but they would still argue that the expansion in the money supply was the "cause" of the inflation--cause in the sense that the Federal Reserve failed to counteract the initiating causes of the inflation by constricting the money supply. This distinction, it seems to us, is a matter of semantics. It doesn't really matter which we call "cause" and "effect," as long as we understand the process.

We would argue, however, for reasons discussed a few pages back--the increased politicization of the economic process, the growing tendency to strive for economic power through organization and to use that power--that the process just described is becoming increasingly relevant as an explanation of both chronic and short-run inflation.[1/]

In the kind of political and economic environment in which we live in the real world, there is a limit to which public policy--monetary and fiscal policy--can be used to constrain inflation. Whenever and to the extent that inflationary pressures are the result of aggregate demand pressures, there is an inverse relationship between the rate of inflation and the rate of unemployment. Public policy actions to constrain inflationary pressures by reducing aggregate demand also tend to raise the level of unemployment, which is political dynamite. The policy makers are therefore forced to choose between two evils. Their choice will

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[1/] Many monetarists, incidentally, would agree with this conclusion. They would argue that what we need to do is: (1) dismantle positions of economic power (unions, large corporations, etc.) and restore something approximating perfect competition; (2) make a firm and permanent commitment by government to stop attempting to "fine-tune" the private economy--to establish a rule that the budget should be consistently balanced except, perhaps, as a consequence of a severe recession, and that the money supply be increased by a constant, predetermined per cent (e.g. 4%) a year; (3) remove restrictions on international trade and allow exchange rates to be completely flexible; and then let "nature take her course."

depend on their basic value systems, the way they sense public opinion, and the political pressures brought to bear upon them. The presidential election this fall will no doubt have some influence on this choice.

Further, the constraints of fiscal and monetary policy, especially the latter, are inevitably imprecise. The consequences of a given change in the money supply, for example, are only approximately predictable, and the lead times are long. The Federal Reserve has received high marks for its performance in the past year, but this good performance was made possible partly by the fact that corporations have been making vigorous efforts to restore their liquidity positions (and have largely succeeded) and thus have reduced inflationary pressures, and partly by pure luck (e.g. the ample grain harvests of 1975 and forecasted for 1976).

For these reasons, both the direction and consequences of monetary and fiscal policy are difficult to predict. In the following, concluding summary and forecasts we will outline our assumptions in this regard.

A Three-Year Forecast of the Rate of Inflation in the United States

It is impossible to forecast accurately the rate of inflation for any considerable period of time. In view of the surprises the world economy had in store for professional economists during the last few years, it is almost foolhardy to predict the rate of inflation for the United States for three fiscal years in the future. However, since one of our assignments is to make a three-year estimate of inflation, we will do so, with the above-mentioned caveats. Any such estimate needs to be reassessed frequently because economic conditions can change quickly.

The reasoning presented in this chapter leads us to the conclusion that the probability range for the inflation rate, measured by the CPI, will average from 6 to 9 per cent in the United States over the three-fiscal-year interval beginning July 1, 1976, as a whole. For the next several months, the inflation rate will probably be near the lower limit of this range, but for reasons discussed earlier and summarized below, we expect the rate to rise as the recovery progresses. We hesitate to offer a more precise figure, but if pressed for a single figure for planning purposes, we would suggest 7-plus per cent as an average for the three fiscal years. The increase in the GNP Deflator will probably be of the same order of magnitude, slightly more or less depending on agricultural output and food prices, which carry a heavier weight in the CPI than in the Deflator, during the three-year period.

(1) As the recovery from the recession continues, as we expect it to do at least through calendar 1978, the gains from labor productivity, which so-far have enabled producers to pay higher wages without corresponding price increases, will diminish. This is typical productivity behavior in a recovery.

(2) Also, as the recovery progresses, the capacity utilization rate will rise, which means putting into production less efficient (higher cost) facilities, and a temptation to raise prices autonomously as competitive pressures subside.

(3) We expect bottlenecks to occur in certain basic, raw material industries, the result of an inadequate level of capital investment in such facilities during the past several years. Indeed, some shortages

are already appearing. This effect is especially likely in industries that have been most affected by environmental controls, where a substantial percentage of available investment dollars has had to go into investment in pollution-control plant and equipment, rather than in net expansion of capacity.

(4) Further price increases of import prices are to be expected. These include, not only oil, but also other raw materials as other producer cartels are created. The rapidly developing shortage of natural gas in the United States will require increased imports of liquified natural gas, which is very costly.

(5) The relatively modest rate of inflation in recent months can be attributed largely to actual decreases in oil prices following passage of the Energy Act in December 1975, and to only small increases in food prices which, in turn, reflect a good harvest in 1975 and forecasts of a bumper harvest in 1976. The first event has already had its full anti-inflationary effect. The provisions for gradual decontrol of domestic "old" oil in the same legislation will eventually work in the opposite direction. Less favorable harvests in the U.S. in 1977 or 1978 or abroad, would remove this dampening effect on the inflation rate. It is significant that prices of services as noted earlier, which account for 37 per cent of the CPI, have increased 8.6 per cent in the past year, and no relief from this inexorable rise is in sight.

(6) We anticipate no significant change in monetary and fiscal policy if President Ford is reelected, but probably a moderately more expansionary policy if Gov. Carter is elected. More specifically,

we are assuming that monetary policy will permit an expansion in the money supply sufficient to fund public and private capital needs without an excessive increase in interest rates and sufficient to preclude choking off the recovery and inducing another recession, but at the same time it will not permit an expansion in the money supply beyond those limits such that an excessive growth in the money supply would itself be an autonomous inflationary influence. It is further assumed that fiscal policy will be moderately expansionary in the interests of sustaining the recovery; but that the level of government spending will be held within reasonable bounds and that further tax reductions will not be made, or at least will be of modest proportions. If, as a result of a Carter victory, a more expansionary policy should be pursued (as is implied by his endorsement of the Humphrey-Hawkins bill), the forecasted inflation rate would have to be raised but the inflationary effects: (1) would not be significant until calendar 1978; and (2) even then would not be large, perhaps in the order of magnitude of one percentage point or less.

(7) We are assuming that wage-price controls will not be reimposed and that no other form of an "incomes policy" of broad applicability will be instituted, at least in the next two fiscal years. If we should be wrong in this assumption, the inflation rate might well be reduced, but probably at the expense of numerous economic distortions of the kind experienced in 1971-74.

Finally, we should like again to emphasize that this forecast is based on information available to us in late September, 1976. Although we believe that our underlying analysis is valid, future events of an unpredictable character could upset our calculations. We do not exactly subscribe to "Murphy's Law" (If anything can go wrong, it probably will!), but it is difficult to foresee events that would significantly reduce the inflation rate below the indicated range, whereas the potentialities for worsening the situation are distressingly numerous.